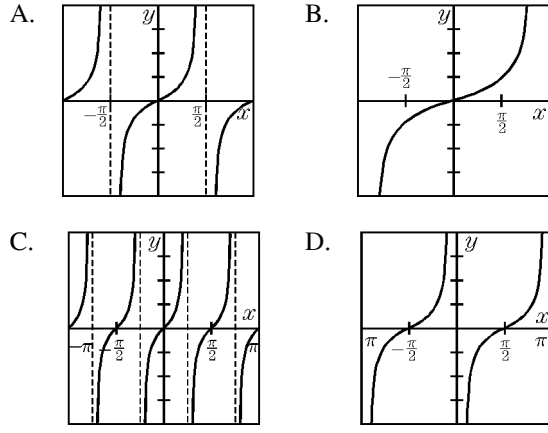


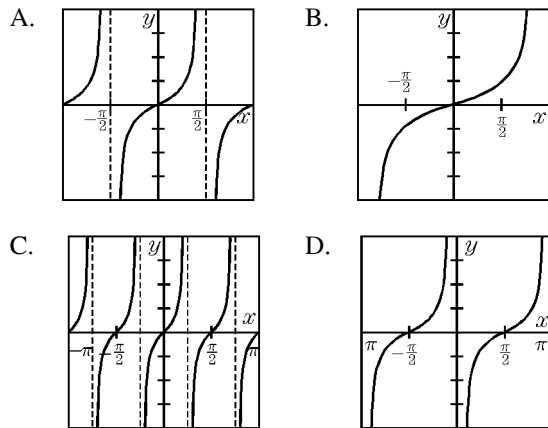
Name: \_\_\_\_\_

Date: \_\_\_\_\_

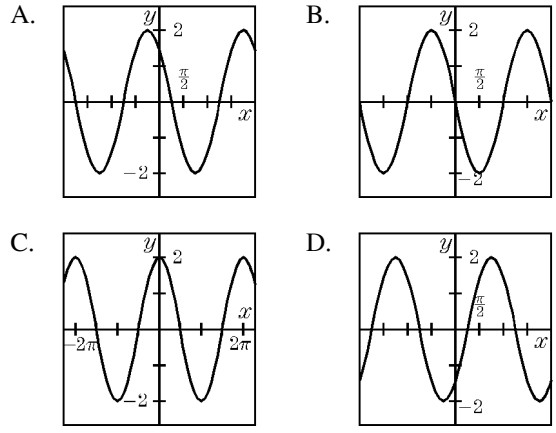
1. Which graph shows  $y = \tan(x - \frac{\pi}{2})$ ?



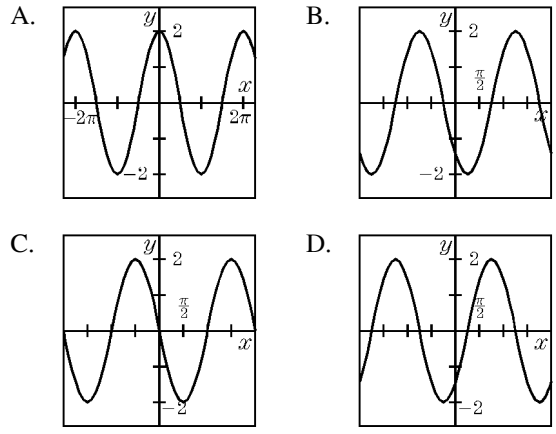
2. Which graph shows  $y = \tan \frac{1}{2}x$ ?



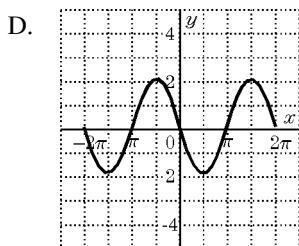
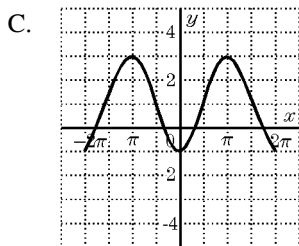
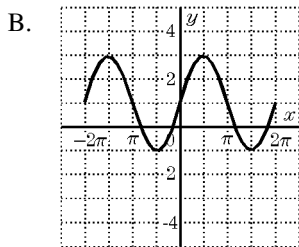
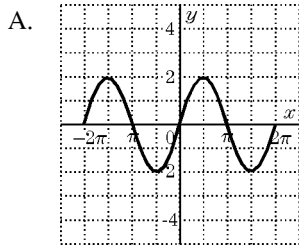
3. Which of the graphs shown is the graph of  $y = -2 \sin x$ ?



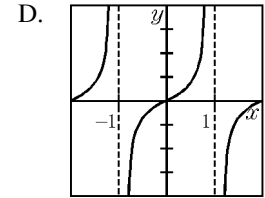
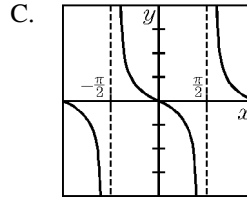
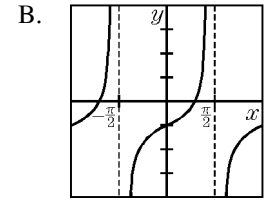
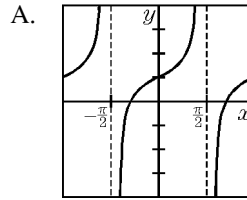
4. Which of the graphs shown is the graph of  $y = -2 \cos(x - \frac{\pi}{2})$ ?



5. The graph of the function  $y = -2 \cos x + 1$  where  $-2\pi \leq x \leq 2\pi$  is best pictured as:



6. Which graph shows  $y = \tan x + 1$ ?



7. The minimum value of  $2 \sin 2x$  is:

- A. 0      B. -1      C. -2      D. -4

8. The maximum value of  $3 \cos 2x$  is:

- A. 1      B.  $2\pi$       C. 3      D. 6

9. The maximum value of  $\frac{1}{4} \cos 2x$  is:

- A. 1      B. 2      C.  $\frac{1}{2}$       D.  $\frac{1}{4}$

10. The maximum value of  $\frac{1}{2} \cos 2x$  is:

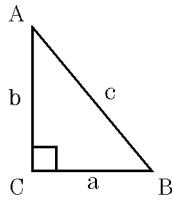
- A. 1      B. 2      C.  $\frac{1}{2}$       D. 4

11. Which of the following ratios is the tangent of an angle?

- A.  $\frac{\text{opposite}}{\text{hypotenuse}}$       B.  $\frac{\text{hypotenuse}}{\text{adjacent}}$   
 C.  $\frac{\text{adjacent}}{\text{hypotenuse}}$       D.  $\frac{\text{opposite}}{\text{adjacent}}$

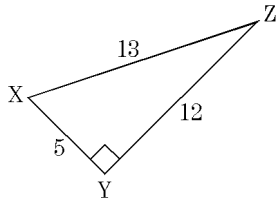
12. Given the triangle shown, which of the following is true?

- A.  $\sin B = \frac{c}{b}$   
 B.  $\cos A = \frac{c}{b}$   
 C.  $\tan A = \frac{b}{a}$   
 D.  $\sin B = \frac{b}{c}$



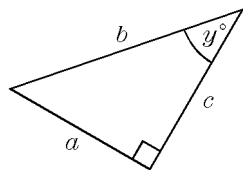
13. Which of the following statements is *incorrect* for  $\triangle XYZ$ ?

- A.  $\sin Z = \frac{5}{13}$   
 B.  $\tan Y = \frac{5}{12}$   
 C.  $XZ = 13$   
 D.  $\cos X = \frac{5}{13}$



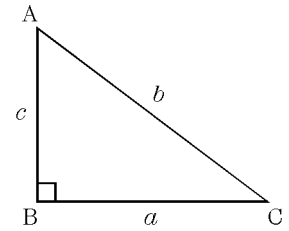
14. Identify the statement that is *incorrect*.

- A.  $\sin y^\circ = \frac{a}{b}$   
 B.  $\cos y^\circ = \frac{c}{b}$   
 C.  $\tan(90^\circ - y^\circ) = \frac{a}{c}$   
 D.  $c^2 + a^2 = b^2$



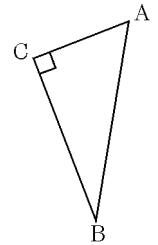
15. Express  $\tan A$  as a ratio of the variables given in  $\triangle ABC$ .

- A.  $\frac{a}{c}$       B.  $\frac{c}{a}$   
 C.  $\frac{a}{b}$       D.  $\frac{c}{b}$



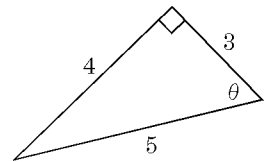
16. Express  $\sin A$  as a ratio of the lengths of the sides of  $\triangle ABC$ .

- A.  $\frac{BC}{AB}$       B.  $\frac{AC}{CB}$   
 C.  $\frac{AC}{AB}$       D.  $\frac{AB}{AC}$



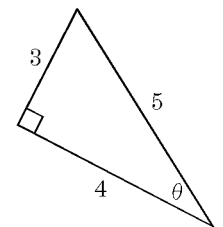
17. Given the following triangle,  $\sin \theta = \underline{\hspace{2cm}}$ .

- A.  $\frac{3}{5}$       B.  $\frac{4}{5}$   
 C.  $\frac{4}{3}$       D.  $\frac{5}{3}$



18. Given the following triangle,  $\cos \theta = \underline{\hspace{2cm}}$ .

- A.  $\frac{3}{5}$       B.  $\frac{3}{4}$   
 C.  $\frac{4}{5}$       D.  $\frac{5}{3}$



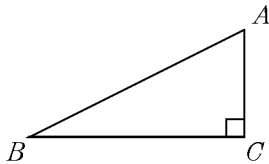
19. Given the following triangle,  $\tan \theta = \underline{\hspace{2cm}}$ .

- A.  $\frac{3}{5}$     B.  $\frac{3}{4}$     C.  $\frac{4}{5}$     D.  $\frac{5}{3}$

20. In a right triangle with sides 8, 15, and 17, what is the cosine of the smallest angle?

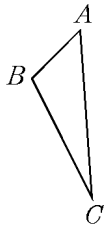
- A.  $\frac{15}{17}$     B.  $\frac{8}{17}$     C.  $\frac{8}{15}$     D.  $\frac{17}{15}$

21. In the triangle below,  $\cos A = \frac{7}{25}$ . Find  $\sin B$ .



- A.  $\frac{25}{24}$     B.  $\frac{24}{25}$     C.  $\frac{7}{25}$     D.  $\frac{7}{24}$

22. For the triangle shown,  $m\angle B = 90$  and  $\cos C = \frac{15}{17}$ . What is  $\cos A$ ?



- A.  $\frac{15}{8}$     B.  $\frac{8}{15}$     C.  $\frac{15}{17}$     D.  $\frac{8}{17}$

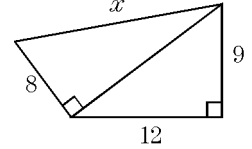
23. If  $\sin \angle B = \frac{4}{5}$  and  $\cos \angle B = \frac{3}{5}$ , what is  $\tan \angle B$ ?

- A.  $\frac{4}{3}$     B.  $\frac{3}{4}$     C.  $\frac{7}{5}$     D.  $\frac{1}{5}$

24. If  $\sin \theta = \frac{2}{5}$  and  $\tan \theta < 0$ , then what is the  $\cos \theta$  expressed as an exact value?

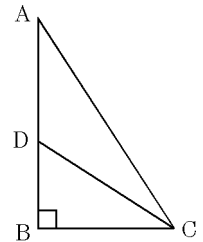
25. Find the length of side  $x$ .

- A. 16    B. 17  
C. 20    D. 21



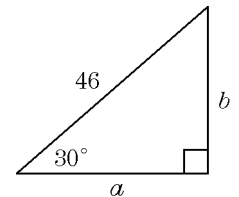
26. In the diagram,  $AB = 15$ ,  $DB = 6$ , and  $BC = 8$ . If  $m\angle B = 90^\circ$ , what is the perimeter of triangle  $ADC$ ?

- A. 24    B. 36  
C. 42    D. 60



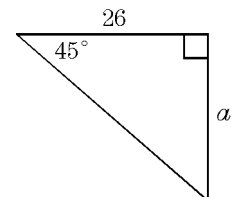
27. Find  $b$ .

- A. 92    B. 76  
C. 23    D. 16



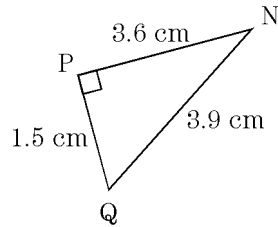
28. Find  $a$ .

- A. 26    B. 36.8  
C. 45    D. 52



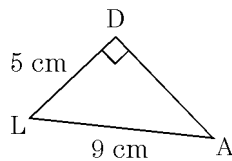
29. In  $\triangle NPQ$ , calculate  $\angle N$  to the nearest degree.

- A.  $23^\circ$    B.  $33^\circ$   
 C.  $65^\circ$    D.  $67^\circ$



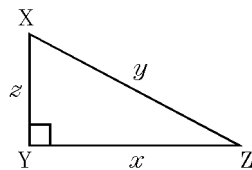
30. In the triangle shown, determine  $\angle A$  to the nearest degree.

- A.  $29^\circ$    B.  $34^\circ$   
 C.  $56^\circ$    D.  $61^\circ$



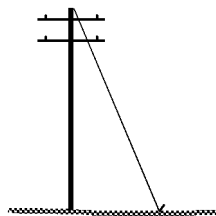
31. To the nearest degree, find the measure of  $\angle Z$  given  $z = 4$  and  $x = 15$ .

- A.  $11^\circ$    B.  $12^\circ$   
 C.  $15^\circ$    D.  $17^\circ$



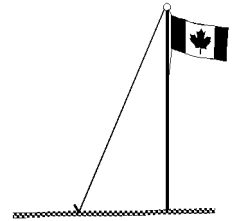
32. A 14 meter long wire is attached to the top of a telephone pole 7 meters tall. What is the exact measure of the angle the wire makes with the ground?

- A.  $30^\circ$    B.  $45^\circ$   
 C.  $60^\circ$    D.  $90^\circ$



33. A 10 meter long wire is attached to the top of a flagpole  $5\sqrt{3}$  meters long. What is the measure of the angle the wire makes with the ground?

- A.  $25^\circ$    B.  $45^\circ$   
 C.  $60^\circ$    D.  $90^\circ$



34. A park ranger is watching a bear from the top of a 14 m tower. If the angle of depression to the bear is  $62^\circ$ , what is the distance from the bear to the base of the tower?

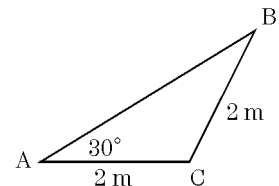
- A. 6.6 m                      B. 12.4 m  
 C. 26.3 m                    D. 36.9 m

35. A person sights an airplane at an elevation of  $50^\circ$ . The airplane is flying 3000 m above the the person. What is the distance from the person to the airplane to the nearest meter?

- A. 1928 m                    B. 2298 m  
 C. 2517 m                    D. 4667 m

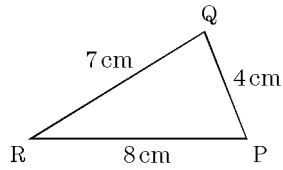
36. What is the length of  $\overline{AB}$  in meters?

- A. 2                      B.  $\sqrt{3}$   
 C. 4                      D.  $2\sqrt{3}$



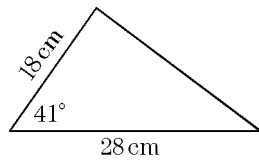
37. To the nearest degree, what is the measure of the smallest angle?

- A. 29    B. 30  
C. 32    D. 35



38. To the nearest whole number, how long is the missing side of the triangle?

- A. 19    B. 27  
C. 43    D. 44



39. In triangle  $ABC$ ,  $A = 30^\circ$ ,  $B = 135^\circ$  and  $a = 10$ . Find  $b$ .

- A.  $10\sqrt{2}$     B.  $5\sqrt{2}$     C.  $\frac{2\sqrt{2}}{5}$     D.  $\frac{\sqrt{2}}{5}$

40. Two towers are 32.2 m apart. From the top of the shorter one, the angle of elevation to the top of the other is  $26.9^\circ$ , while the angle of depression to the base is  $78.7^\circ$ . Find the *sum* of the tower heights to the nearest tenth of a meter.

- A. 161.1 m                      B. 177.4 m  
C. 249.0 m                      D. 338.6 m

41. Marcos measured the angle of elevation of a tree and found it to be  $20^\circ$ . He walked 100 m closer. This time, the angle of elevation was  $30^\circ$ . How tall is the tree? (Answer to 1 decimal place.)

- A. 98.5 m                      B. 119.2 m  
C. 135.8 m                      D. 170.6 m

- |  |  |
|--|--|
| <p>1.<br/>Answer: D<br/>Objective: F.IF.07E</p> <p>2.<br/>Answer: B<br/>Objective: F.IF.07E</p> <p>3.<br/>Answer: B<br/>Objective: F.IF.07E</p> <p>4.<br/>Answer: C<br/>Objective: F.IF.07E</p> <p>5.<br/>Answer: C<br/>Objective: F.IF.07E</p> <p>6.<br/>Answer: A<br/>Objective: F.IF.07E</p> <p>7.<br/>Answer: C<br/>Objective: F.IF.07E</p> <p>8.<br/>Answer: C<br/>Objective: F.IF.07E</p> <p>9.<br/>Answer: D<br/>Objective: F.IF.07E</p> <p>10.<br/>Answer: C<br/>Objective: F.IF.07E</p> <p>11.<br/>Answer: D<br/>Objective: G.SRT.06</p> <p>12.<br/>Answer: D<br/>Objective: G.SRT.06</p> <p>13.<br/>Answer: B<br/>Objective: G.SRT.06</p> <p>14.<br/>Answer: C<br/>Objective: G.SRT.06</p> | <p>15.<br/>Answer: A<br/>Objective: G.SRT.06</p> <p>16.<br/>Answer: A<br/>Objective: G.SRT.06</p> <p>17.<br/>Answer: B<br/>Objective: G.SRT.06</p> <p>18.<br/>Answer: C<br/>Objective: G.SRT.06</p> <p>19.<br/>Answer: B<br/>Objective: G.SRT.06</p> <p>20.<br/>Answer: A<br/>Objective: G.SRT.06</p> <p>21.<br/>Answer: C<br/>Objective: G.SRT.07</p> <p>22.<br/>Answer: D<br/>Objective: G.SRT.07</p> <p>23.<br/>Answer: A<br/>Objective: G.SRT.07</p> <p>24.<br/>Answer: <math>-\frac{\sqrt{21}}{5}</math><br/>Objective: G.SRT.07</p> <p>25.<br/>Answer: B<br/>Objective: G.SRT.08</p> <p>26.<br/>Answer: B<br/>Objective: G.SRT.08</p> <p>27.<br/>Answer: C<br/>Objective: G.SRT.08</p> |
|--|--|

28.  
Answer: A  
Objective: G.SRT.08
29.  
Answer: A  
Objective: G.SRT.08
30.  
Answer: B  
Objective: G.SRT.08
31.  
Answer: C  
Objective: G.SRT.08
32.  
Answer: A  
Objective: G.SRT.08
33.  
Answer: C  
Objective: G.SRT.08
34.  
Answer: C  
Objective: G.SRT.08
35.  
Answer: C  
Objective: G.SRT.08
36.  
Answer: D  
Objective: G.SRT.11
37.  
Answer: B  
Objective: G.SRT.11
38.  
Answer: A  
Objective: G.SRT.11
39.  
Answer: A  
Objective: G.SRT.11
40.  
Answer: D  
Objective: G.SRT.11
41.  
Answer: A  
Objective: G.SRT.11