

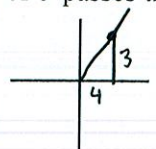
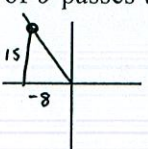
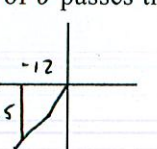
# 7.4A - sol

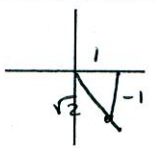
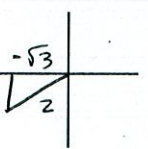
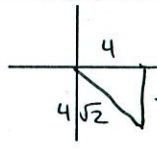
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## Practice:

### Trig for Any Angle or Radius

Evaluate the function given a point on the terminal side of the angle. Simplify completely and rationalize when needed.

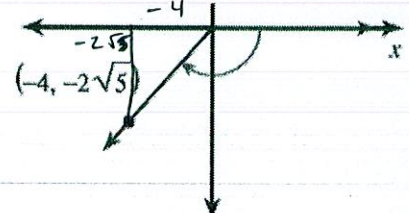
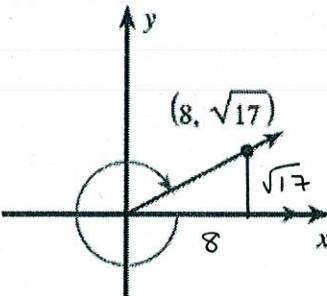
<p>1. Find <math>\csc \theta</math>, when the terminal side of <math>\theta</math> passes through (4, 3).</p>  $3^2 + 4^2 = r^2$ $9 + 16 = r^2$ $r = 5$ $\csc \theta = \frac{r}{y} = \frac{5}{3}$	<p>2. Find <math>\sec \theta</math>, when the terminal side of <math>\theta</math> passes through (-8, 15).</p>  $r = 17$ $\sec \theta = \frac{r}{x} = \frac{17}{-8}$	<p>3. Find <math>\tan \theta</math>, when the terminal side of <math>\theta</math> passes through (-12, -5).</p>  $r = 13$ $\tan \theta = \frac{y}{x} = \frac{5}{12}$
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<p>5. Find <math>\sin \theta</math>, when the terminal side of <math>\theta</math> passes through (1, -1).</p>  $\sin \theta = \frac{-1}{\sqrt{2}}$ <p>The <math>m\angle \theta = \frac{7\pi}{4}</math> (in radians)</p>	<p>6. Find <math>\cos \theta</math>, when the terminal side of <math>\theta</math> passes through <math>(-\sqrt{3}, -1)</math>.</p>  $\cos \theta = \frac{-\sqrt{3}}{2}$ <p>The <math>m\angle \theta = \frac{7\pi}{6} = 210^\circ</math> (in degrees)</p>	<p>7. Find <math>\cot \theta</math>, when the terminal side of <math>\theta</math> passes through (4, -4).</p>  $\cot \theta = -1$ <p>The <math>m\angle \theta = \frac{7\pi}{4}</math> (in radians)</p>
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Determine the quadrant in which the terminal side of the angle,  $\theta$ , lies.

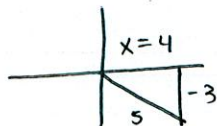
<p>9. <math>\csc \theta &lt; 0</math> and <math>\cos \theta &gt; 0</math>  <math>y &lt; 0</math>      <math>x &gt; 0</math></p> <p>Q4</p>	<p>10. <math>\tan \theta &gt; 0</math> and <math>\cos \theta &lt; 0</math>  <math>\theta</math> 1 or 3      <math>x &lt; 0</math></p> <p>Q3</p>	<p>11. <math>\sin \theta &gt; 0</math> and <math>\cos \theta &lt; 0</math>  <math>y &gt; 0</math>      <math>x &lt; 0</math></p> <p>Q2</p>	<p>12. <math>\sec \theta &gt; 0</math> and <math>\cot \theta &gt; 0</math>  <math>x &gt; 0</math>      <math>\theta</math> 1 or 3</p> <p>Q1</p>
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Find the exact value of the function given the graph. Simplify completely and rationalize when needed.

<p>13. <math>\sin \theta =</math></p>  $16 + 20 = r^2$ $r = 6$ $\sin \theta = \frac{-2\sqrt{5}}{6} = \frac{-\sqrt{5}}{3}$	<p>14. <math>\cos \theta =</math></p>  $64 + 17 = r^2$ $r = 9$ $\cos \theta = \frac{8}{9}$
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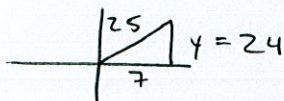
Find the indicated trig ratio in the specified quadrant. Simplify completely and rationalize when needed.

15.  $\sin \theta = -\frac{3}{5}$  and  $\theta$  is in Q4.  
Find  $\cos \theta$ .



$$\cos \theta = \frac{4}{5}$$

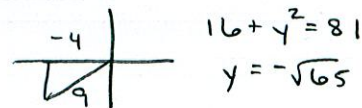
16.  $\cos \theta = \frac{7}{25}$  and  $\theta$  is in Q1.  
Find  $\csc \theta$ .



$$\csc \theta = \frac{r}{y} = \frac{25}{24}$$

17.  $\sec \theta = -\frac{9}{4}$  and  $\theta$  is in Q3.  
Find  $\tan \theta$ .

$$\sec \theta = \frac{r}{x} = \frac{9}{-4}$$



$$\tan \theta = \frac{y}{x} = \frac{\sqrt{65}}{4}$$

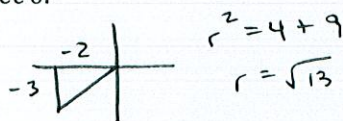
18.  $\csc \theta = -2$  and  $\sec \theta > 0$ . Q4  
Find  $\cot \theta$ .

$$\csc \theta = \frac{r}{y} = \frac{2}{-1}$$



$$\cot \theta = \frac{x}{y} = \frac{-1}{\sqrt{3}}$$

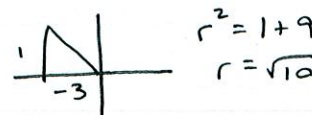
19.  $\tan \theta = \frac{3}{2}$  and  $\sin \theta < 0$ . Q3  
Find  $\sec \theta$ .



$$\sec \theta = \frac{r}{x} = \frac{-\sqrt{13}}{2}$$

20.  $\cot \theta = -3$  and  $\cos \theta < 0$ . Q2  
Find  $\sin \theta$ .

$$\cot \theta = \frac{x}{y} = -\frac{3}{1}$$



$$\sin \theta = \frac{y}{r} = \frac{1}{\sqrt{10}} \text{ or } \frac{\sqrt{10}}{10}$$