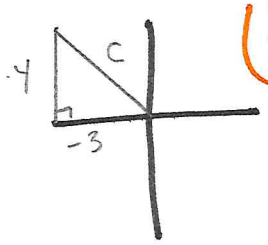
Honors Algebra 2
Pythagorean Identity Practice 2

Name Key hr__

Given one trig ratio, find the other **2** ratios. Then verify the identity. Show the triangle for each example.

1. $\tan\theta = \frac{-4}{3}$ *and* $\sin\theta$ *is positive.*



$c = 5$

$\cos = \frac{-3}{5}$

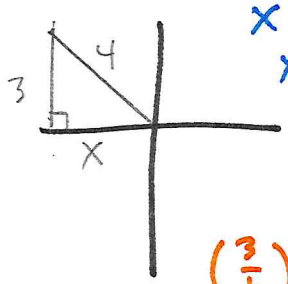
$\sin = \frac{4}{5}$

$\left(\frac{4}{5}\right)^2 + \left(\frac{-3}{5}\right)^2 = 1$

$\frac{16}{25} + \frac{9}{25} = 1$

$\frac{25}{25} = 1$ ✓

2. $\sin\theta = \frac{3}{4}$ *and* $\tan\theta$ *is negative.*



$x^2 + 3^2 = 4^2$

$x^2 + 9 = 16$

$x^2 = 7$

$x = -\sqrt{7}$

$\cos = \frac{-\sqrt{7}}{4}$

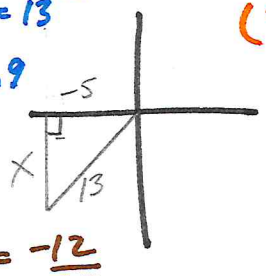
$\tan = \frac{3}{-\sqrt{7}} = \frac{-3\sqrt{7}}{7}$

$\left(\frac{3}{4}\right)^2 + \left(\frac{-\sqrt{7}}{4}\right)^2 = 1$

$\frac{9}{16} + \frac{7}{16} = 1$

$\frac{16}{16} = 1$ ✓

3. $\cos\theta = \frac{-5}{13}$ *and* $\tan\theta$ *is positive.*



$x^2 + (-5)^2 = 13^2$

$x^2 + 25 = 169$

$x^2 = 144$

$x = -12$

$\sin = \frac{-12}{13}$

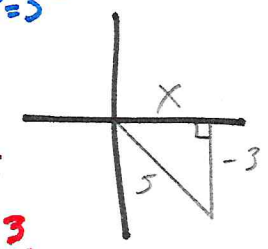
$\tan = \frac{12}{5}$

$\left(\frac{-12}{13}\right)^2 + \left(\frac{-5}{13}\right)^2 = 1$

$\frac{144}{169} + \frac{25}{169} = 1$

$\frac{169}{169} = 1$ ✓

4. $\sin\theta = \frac{-3}{5}$ *and* $\cos\theta$ *is positive.*



$x^2 + (-3)^2 = 5^2$

$x = 4$

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

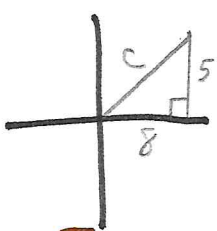
$\tan = -\frac{3}{4}$

$\left(\frac{-3}{5}\right)^2 + \left(\frac{4}{5}\right)^2 = 1$

$\frac{9}{25} + \frac{16}{25} = 1$

$\frac{25}{25} = 1$ ✓

5. $\tan\theta = \frac{5}{8}$ *and* $\sin\theta$ *is positive.*



$5^2 + 8^2 = c^2$

$25 + 64 = c^2$

$89 = c^2$

$\sqrt{89} = c$

$\cos = \frac{8}{\sqrt{89}} = \frac{8\sqrt{89}}{89}$

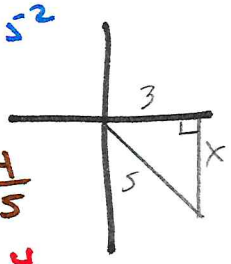
$\sin = \frac{5}{\sqrt{89}} = \frac{5\sqrt{89}}{89}$

$\left(\frac{5}{\sqrt{89}}\right)^2 + \left(\frac{8}{\sqrt{89}}\right)^2 = 1$

$\frac{25}{89} + \frac{64}{89} = 1$

$\frac{89}{89} = 1$ ✓

6. $\cos\theta = \frac{3}{5}$ *and* $\sin\theta$ *is negative.*



$3^2 + x^2 = 5^2$

$x = 4$

$\sin = \frac{4}{5}$

$\tan = \frac{4}{3}$

$\left(\frac{4}{5}\right)^2 + \left(\frac{3}{5}\right)^2 = 1$

$\frac{16}{25} + \frac{9}{25} = 1$

$\frac{25}{25} = 1$ ✓