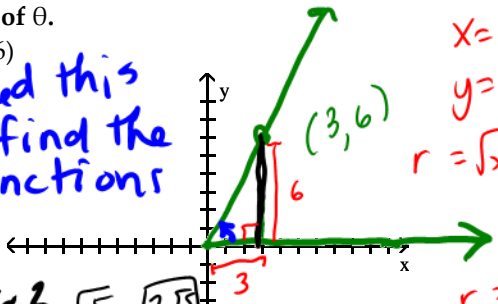
MATH 104/GRACEY
WORKSHEET/1.3-1.4

Name_____

Sketch an angle θ in standard position such that θ has the smallest positive measure and the given point is on the terminal side of θ.

1) (3, 6)



we extended this prob. to find the 6 trig functions

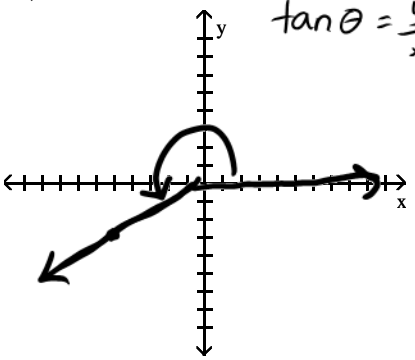
$x=3$, $y=6$, $r=\sqrt{x^2+y^2}$, $r=\sqrt{3^2+6^2}$, $r=\sqrt{45}$, $r=3\sqrt{5}$

$\sin\theta=\frac{y}{r}=\frac{6}{3\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}}=\boxed{\frac{2\sqrt{5}}{5}}$

$\csc\theta=\frac{r}{y}=\boxed{\frac{\sqrt{5}}{2}}$

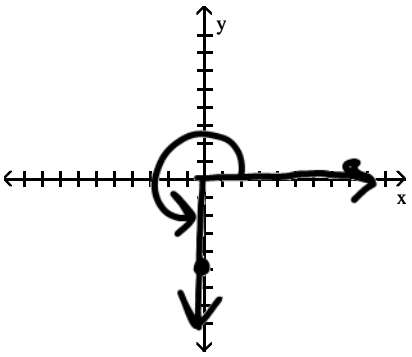
$\cos\theta=\frac{x}{r}=\frac{3}{3\sqrt{5}}=\boxed{\frac{\sqrt{5}}{5}}$ $\sec\theta=\boxed{\sqrt{5}}$

2) (−5, −3)



$\tan\theta=\frac{y}{x}=\frac{6}{3}=\boxed{2}$ $\cot\theta=\boxed{\frac{1}{2}}$

3) (0, −5)



Suppose that θ is in standard position and the given point is on the terminal side of θ. Give the exact value of the indicated trig function for θ.

4) (3, 4); Find sin θ.

$x=3$, $y=4$

$r=\sqrt{x^2+y^2}$ $\sin\theta=y/r=\boxed{4/5}$

$r=\sqrt{(3)^2+(4)^2}=\sqrt{9+16}$

$=\sqrt{25}=5$

5) (15, 20); Find csc θ.

$r=\sqrt{x^2+y^2}=\sqrt{(15)^2+(20)^2}$

$\csc\theta=\frac{r}{y}$ $=\sqrt{225+400}$

$=\sqrt{625}=25$

$\csc\theta=\frac{25}{20}=\boxed{\frac{5}{4}}$

6) (−3, 8); Find tan θ.

$\tan\theta=\frac{y}{x}=\frac{8}{-3}=\boxed{-\frac{8}{3}}$

7) (18, 24); Find cos θ.

$r=\sqrt{(18)^2+(24)^2}=\sqrt{324+576}=\sqrt{900}$

$=30$

$\cos\theta=\frac{x}{r}=\frac{18}{30}=\boxed{\frac{3}{5}}$

If r is a positive number and the point (x, y) is in the indicated quadrant, decide whether the given ratio is positive or negative.

8) II, $\frac{r}{x}$ negative

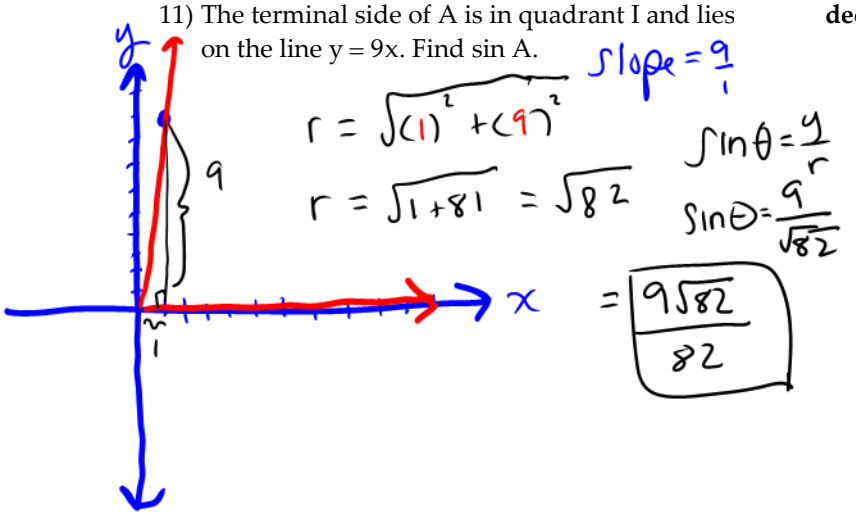
remember... r is always positive!

9) IV, $\frac{x}{y}$ negative

10) IV, $\frac{r}{y}$ negative

A is an angle in standard position and satisfies the given conditions. Find the indicated trigonometric function value of A. Do not use a calculator.

11) The terminal side of A is in quadrant I and lies on the line y = 9x. Find sin A.



Evaluate the expression.

12) $\sin^2 90° + \cos^2 90°$

13) $\cos 0° - 8 \sin 90°$

14) $\cot 270° + 8 \cos 180° + 5 \sec^2 360°$

If n is an integer, n • 180° represents an integer multiple of 180°, and (2n + 1) • 90° represents an odd integer multiple of 90°. Decide whether the expression is equal to 0, 1, –1, or is undefined.

15) sin(n • 180°)

16) sec((2n + 1) • 90°)

Use the appropriate identity to find the indicated function value. Rationalize the denominator, if applicable. If the given value is a decimal, round your answer to three decimal places.

17) csc θ, if $\sin \theta = \frac{1}{9}$

18) cos θ, if sec θ = –4

19) tan θ, if $\cot \theta = -\frac{2}{3}$

20) cot θ, if tan θ = 0.1044

21) csc θ, if sin θ = –0.0559

Without using a calculator, decide which is greater.

22) sin 178° or tan 178°

23) csc 17° or cos 17°

24) cos 118° or cos 119°

Use the fundamental identities to find the value of the trigonometric function.

25) Find sin θ if $\cos \theta = \frac{2}{3}$ and θ is in quadrant IV.

26) Find $\tan\theta$ if $\sin\theta = \frac{3}{4}$ and θ is in quadrant II.

27) Find $\cot\theta$ if $\tan\theta = \frac{\sqrt{7}}{3}$ and θ is in quadrant III.

28) Find $\sec\theta$ if $\tan\theta = 2.0503038$ and θ is in quadrant I.

Provide an appropriate response.

29) Explain what is wrong with this problem: Find $\csc\theta$, given that $\sin\theta = \frac{4}{3}$.

30) If, for some particular angle θ, $\sin\theta > 0$ and $\cos\theta < 0$, in what quadrant must θ lie? What is the sign of $\tan\theta$?