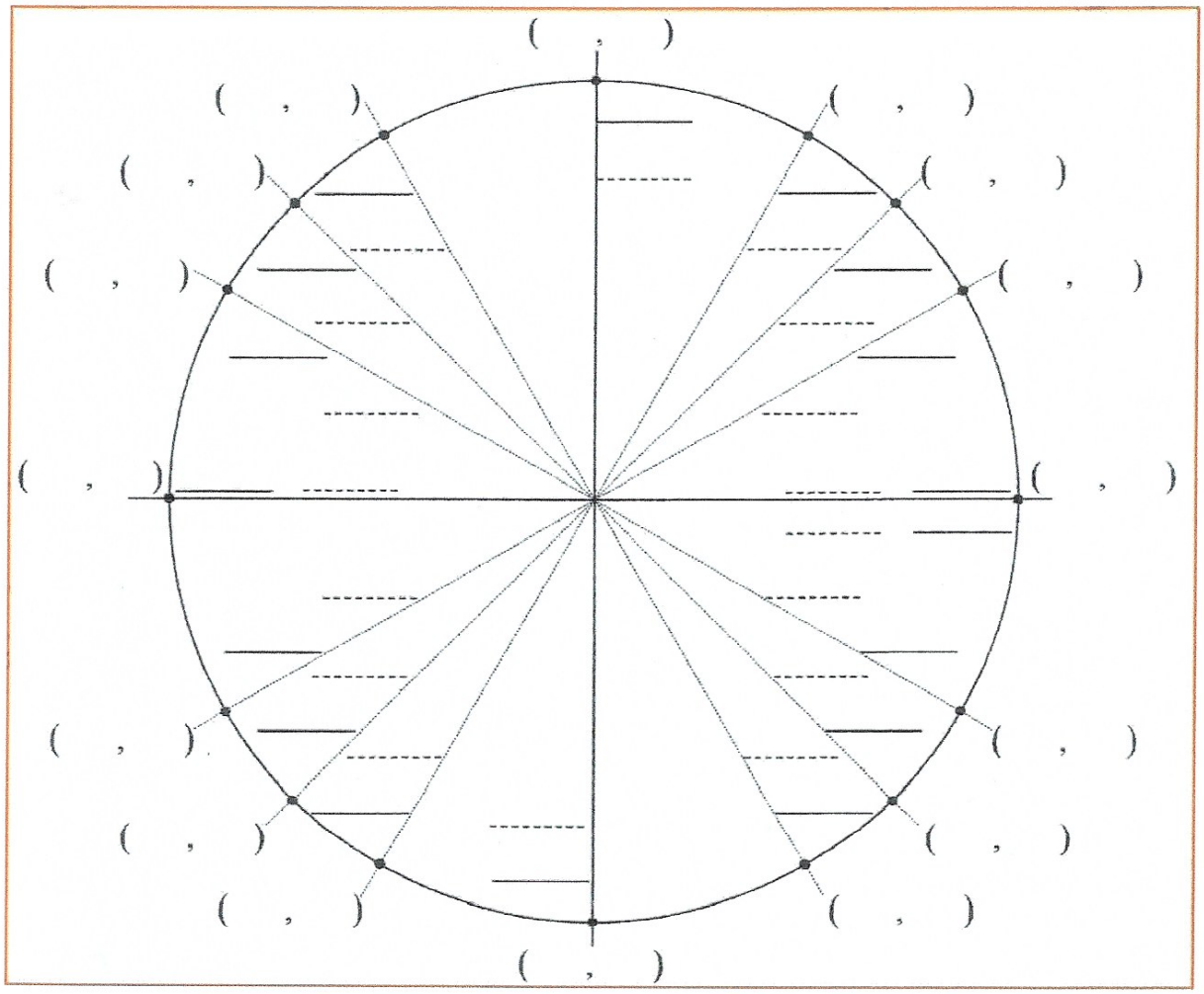
Make several copies of this page and practice filling it in over and over again, until you can do it without even thinking about it!

Practice Fill-in Unit Circle



Simplify.

1. a) $\frac{x^3-9x}{x^2-7x+12}$

b) $\frac{x^2-2x-8}{x^3+x^2-2x}$

c) $\frac{\frac{1}{x}-\frac{1}{5}}{\frac{1}{x^2}-\frac{1}{25}}$

Rationalize the denominator.

2. $\frac{2}{\sqrt{3}+\sqrt{2}}$

Write all of the following expressions in the form ca^pb^q where c, p, and q are numbers.

3. a) $\frac{(2a^2)^3}{b}$ b) $\sqrt{16ab^3}$

Solve for x (without a calculator).

4. a) $5^{x+1} = 25$ b) $log_3 x^2 = 2log_3 4 - 4log_3 5$

Solve the following equations for the indicated variables. (in terms of the other variables.)

5. a) $A = 2\pi r^2 + 2\pi rh$, for positive r

b) $A = P + nrP$, for P

Factor completely.

6. a) $x^6 - 16x^4$ b) $4x^3 - 8x^2 - 25x + 50$

Solve for x.

7. a) $3sin^2 x = cos^2 x; 0 \leq x < 2\pi$ b) $tanx + secx = 2cosx; -\infty < x < \infty$

Without using a calculator, evaluate the following:

8. a) $\cos 210°$ b) $sin\frac{5\pi}{4}$ c) $tan^{-1}(-1)$

Find the domain of the function.

9. $f(x) = \frac{3x+1}{\sqrt{x^2+x-2}}$

10. Simplify $\frac{f(X+h)-f(x)}{h}$, *where* $f(x) = 2x + 3.$

11. a) A water tank has the shape of a cone (like an ice cream cone without ice cream). The tank is 10m high and has a radius of 3m at the top. If the water is 5m deep (in the middle) what is the surface area of the top of the water?

b) Two cars start moving from the same point. One travels south at 100km/hr, the other west at 50 km/hr. How far apart are they two hours later?

c) A kite is 100m above the ground. If there are 200m of string out, what is the angle between the string and the horizontal. (Assume that the string is perfectly straight.)