Sols

Math 141: Chapter 1 Review

Know how to do these problems without the aid of a book or notes.

1. Find the solutions to each polynomial.

(a) $f(x) = x^2 - 8x + 12$

$(x-6)(x-2) = 0$

$x = 6$ $x = 2$

(b) $f(x) = 2x^2 - 9x - 5$

$(2x+1)(x-5) = 0$

$2x + 1 = 0$ $x = 5$

$x = -1/2$

(c) $f(x) = x^2 - 1$

$(x+1)(x-1) = 0$

$x = -1$ $x = 1$

(d) $f(x) = x^2 - 2$ * Can't Factor!

$x^2 - 2 = 0$ $x = \pm\sqrt{2}$ (Can also use quadratic formula)

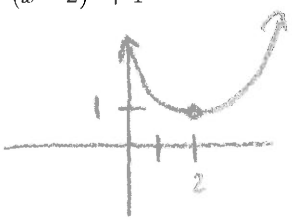
$x^2 = 2$

2. Sketch a graph of the following:

(a) $y = \ln(x)$

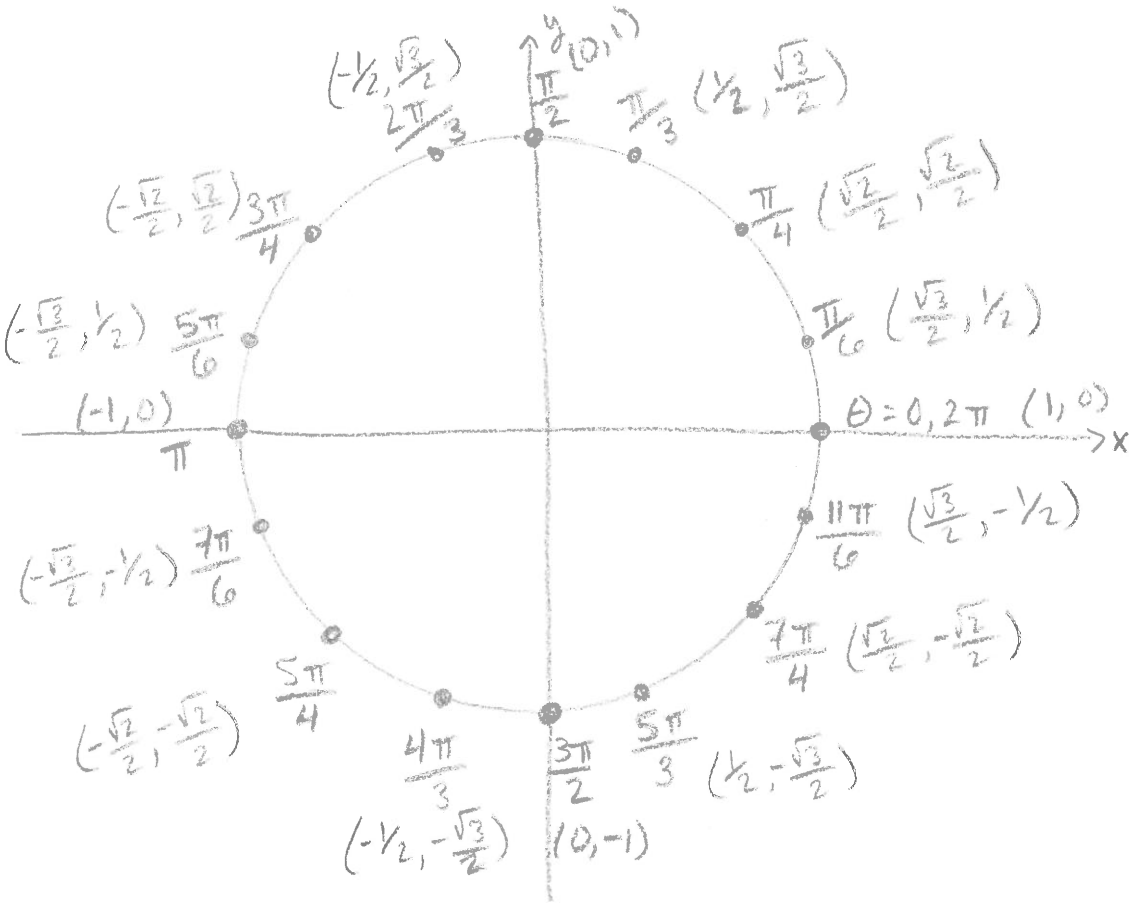
(b) $y = e^x$

(c) $y = (x-2)^2 + 1$



3. Draw the unit circle and fill in the following angles with their corresponding coordinates:

(a) $\pi/2, \pi, 3\pi/2, 2\pi$ **(b)** $\pi/6, 5\pi/6, 7\pi/6, 11\pi/6$ **(c)** $\pi/4, 3\pi/4, 5\pi/4, 7\pi/4$
(d) $\pi/3, 2\pi/3, 4\pi/3, 5\pi/3$



These are just solutions; Show your work!

4. Simplify the following expressions:

(a) $x^2(4(x-2)^3)+2x(x-4)^4$

$6x^5-40x^4+96x^3-96x^2+32x$

(b) $\dfrac{(x^2+3)^2(6)-6x(2)(x^2+3)(2x)}{(x^2+3)^4}$

$\dfrac{-18(x^2-1)}{(x^2+3)^3}$

(c) $\dfrac{\frac{1}{x^2}-\frac{1}{9}}{x-3}$

$\dfrac{-(x+3)}{9x^2}$

(d) $\dfrac{\sqrt{25+x^2}-x(1/2)(25+x^2)^{-1/2}(2x)}{25+x^2}$

$\dfrac{25}{(x^2+25)^{3/2}}$

5. Solve the following inequalities:

(a) $\frac{x}{2}-1<3x+9$

$\frac{x}{2}<3x+10$

$x<6x+20$ → $-5x<20$

$\boxed{x>-4}$

(b) $x+3<2x+8<3x+10$

$-5<x$ $\quad \boxed{-2<x}$

$x+3<3x+10$

$-7<2x$

$-3.5<x$

(c) $|2x-5|\le 11$

$-11\le 2x-5\le 11$

$-6\le 2x\le 16$

$\boxed{-3\le x\le 8}$