Math 111 – Sections 2.3-3.5 Practice Test

Show all work. Simplify all answers. Leave all answers exact (reduced fractions not rounded decimals – unless otherwise indicated). Note that these problems are a sample of possible problems, not a complete list.

1) Subtract $(3-5i)-(-4+i)$

2) Multiply $(8+6i)(-6-7i)$

3) Divide $\dfrac{2-6i}{6+2i}$

4) Simplify i^{43}

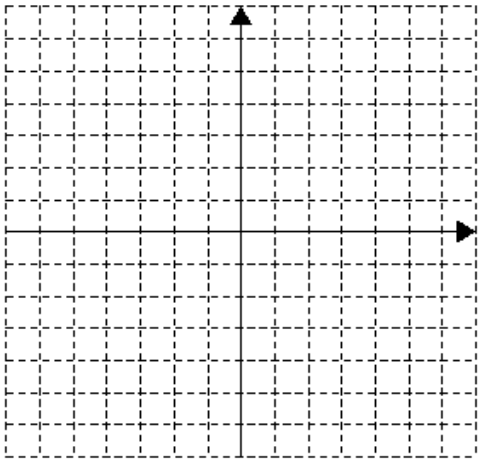
5) Solve $x^2-x+8=0$

6) Solve $4x^2=52$

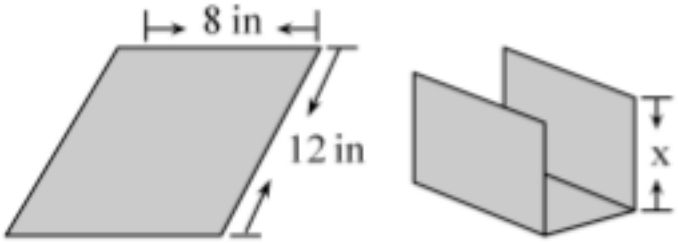
7) Solve $x^4-15x^2+44=0$

8) Find the vertex of $f(x)=-x^2-6x-4$

9) Graph $f(x)=-x^2-6x-4$ (Hint: use the answer from 8)



10) A one compartment vertical file is to be constructed by bending the long side of an 8in. by 12 in. sheet of plastic along two lines to form a U shape. How tall should the file be to maximize the volume that it can hold?



11) Solve $\dfrac{-3a}{a+20}=\dfrac{3}{a-10}$

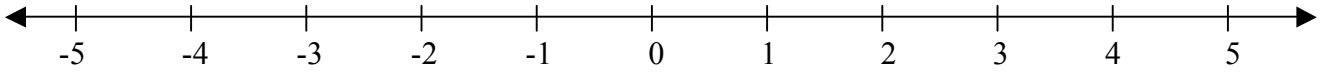
12) Solve $\dfrac{4}{5}+\dfrac{1}{6}=\dfrac{1}{x}$

13) Solve $\sqrt{x+36}=x-6$

14) Solve $\sqrt{2x+1}-2=2$

15) Solve $|4x-1|=6$

16) Solve and graph $|x+3| \geq 1$



17) The wavelength, W, of a wave varies inversely as its frequency, F. A wave with frequency 11 kHz has a wavelength of 250 m. What is the wavelength of a wave with a frequency of 8 kHz?

18) The intensity, I, of light varies directly with the power, P (in watts), of the light source and inversely with the square of the distance, d (in meters), to the light source. A 100 watt light bulb has an intensity of 40L at a distance of 5 meters. What is the intensity of a 60 watt bulb at a distance of 10 meters?

19/20) For the following problems use $f(x) = 2x^2 - 1$ and $h(x) = \sqrt{2x+3}$

Find $h(f(x)) = (h \circ f)(x)$

Find $f(h(x)) = (f \circ h)(x)$

21/22/23) Graph $\sqrt{x}$, $\sqrt{x-2}$, $\sqrt{x}-2$

Label which graph is which!