

## Ms. McCleary's Are You Ready for Calculus Handout

You should be able to complete the following problems, without the use of a graphing calculator, in less than 15 minutes. If not, then you need to review on your own. There are many resources available on either our Calculus Resource Page or our Review Page.

**Factor the following:**

$$x^2 + 4x + 4$$

$$x^2 + 5x + 6$$

$$x^3 - 27$$

$$x^3 + 64$$

**Expand the following:**

$$(x - 5)^2$$

$$(2x + 3)^2$$

$$(x + 1)^3$$

$$(x - 4)^3$$

**Simplify the following:**

$$\ln e^x$$

$$\frac{x^3 - 9x}{x^2 - 7x + 12}$$

$$\sqrt{x} \left( x^2 - x^{\frac{3}{2}} + \sqrt{x} \right)$$

$$\tan x (\cos x - \cot x)$$

**Find the numerical value of the following:**

$$\sin\left(\frac{\pi}{2}\right)$$

$$\cos\left(\frac{\pi}{6}\right)$$

$$\tan\left(\frac{\pi}{4}\right)$$

$$\sec(0)$$

$$\csc(\pi)$$

$$\cot\left(\frac{\pi}{3}\right)$$

$$\ln e$$

$$\ln 1$$

$$2^{-3}$$

$$\frac{-1}{3}$$
$$(-27)$$

$$\sin^2\left(\frac{3\pi}{2}\right) + \cos^2\left(\frac{3\pi}{2}\right)$$

### **Linear Functions**

Write the equation of the line that passes through the points  $(1, 2)$  and  $(-3, -2)$

Write the equation of the line that goes through the point  $(-1, 3)$  and is parallel to the line  $4x - 2y = 1$

Write the equation of the line that goes through the point  $(-8, -3)$  and is normal [perpendicular] to the line  $x - 2y = 4$

**Graph the following six functions [use the axes given]**

**(1)**  $f(x) = x^2$  **(2)**  $f(x) = x^3$  **(3)**  $f(x) = |x|$  **(4)**  $f(x) = \ln x$  **(5)**  $f(x) = e^x$  **(6)**  $f(x) = \frac{|x|}{x}$

