Math 103 **Assignment 7** **Spring 2010**

Name SOLUTIONS

(circle your lab section)

- ▷ **AB1**, Fri 11:00-12:40, Brian Benson
- ▷ **AB2**, Thu 3:00-4:40, Paul Spiegelhalter
- ▷ **AB3**, Thu 1:00-2:40, Brian Benson
- ▷ **AB4**, Fri 1:00-2:40, Paul Spiegelhalter

- You may work with other students in this class. However each student should write up solutions separately and independently – nobody should copy someone else's work.

- Be sure that your work is neat and that sufficient work is shown to justify each answer.

- Use this page as a cover sheet and staple all of your work together. Use additional pages where necessary.

- This is due at the beginning of lecture on Tuesday, April 13th.

1. (2 points) Rewrite the following expression with positive exponents and simplify.

$$\frac{12x}{(2x^{-3})^2} = \frac{12x}{\left(\frac{2}{x^3}\right)^2}$$

$$= \frac{12x}{\left(\frac{4}{x^6}\right)} = 12x \cdot \left(\frac{x^6}{4}\right)$$

$$= 3x^7$$

2. (2 points) Find all real solutions to the inequality $x(x-2) < 15$.

$$x^2 - 2x < 15$$
$$x^2 - 2x - 15 < 0$$
$$(x-5)(x+3) < 0$$

$$-3 < x < 5$$

3. (2 points) Find the equation of the line which contains the point $(6, 5)$ and is parallel to the line $y = 3x + 2$.

POINT: (6,5)
SLOPE: 3

$$y - 5 = 3(x - 6)$$
$$y - 5 = 3x - 18$$
$$y = 3x - 13$$

4. (2 points) Find the domain of the function $f(x) = \sqrt{100 - x^2}$.

$$100 - x^2 \geq 0$$
$$x^2 \leq 100$$
$$|x| \leq 10$$

$$-10 \leq x \leq 10$$

5. (2 points) A bank has advertised that their customers can double their investments in only 5 years! What is the interest rate used by this bank if interest is compounded annually?

$$A = A_0(1+r)^t$$
$$2A_0 = A_0(1+r)^5$$
$$2 = (1+r)^5$$
$$1 + r = \sqrt[5]{2}$$

$$r = \sqrt[5]{2} - 1$$
$$r \approx 0.149$$

14.9%