Math 156 PRECALCULUS
Fall 2015

Quiz 6 – Version Retake

Tuesday, October 27, 2015

Name:_____

This quiz has 6 problems worth a total of 30 points. It is TWO SIDED.

1. (5 points) Let $f(x) = 3x^2 - 9x + 4$.

   (a) Express f in standard form.

   (b) Find the vertex of f.

2. (6 points) Given $f(x) = (x + 7)^2 - 6$, a quadratic function in standard form, answer the questions below.

   (a) Find the y-intercept(s) of f, or state that none exist.

   (b) Find the x-intercept(s) of f, or state that none exist.

   (c) Find the range of $f(x)$.

3. (6 points) Let $g(x) = \frac{x^2+x-6}{x^2+3x}$.

   (a) Find all horizontal asymptotes, if any exist.

   (b) Find all vertical asymptotes, if any exist.

   (c) Find all y-intercepts, if any exist.

4. (4 points) Solve the inequality $\frac{2x+1}{3x+1} \leq 1$.

5. (5 points) For $P(x) = -2(x+4)^2(x-1)^3$. Sketch the graph of $P(x)$. Label any x- or y-intercepts and exhibit the proper end behavior.

6. (4 points) Given $P(x) = 6x^3 - 8x^2 + 5x - 5$ and $D(x) = 2x^2 + 1$, use long division to divide $P(x)$ by $D(x)$ and express the quotient $P(x)/D(x)$ in the form:

$$\frac{P(x)}{D(x)} = Q(x) + \frac{R(x)}{D(x)}.$$