

Name _____

Instructor _____

Student ID # _____

QUIZ

Math 1090

Show all your work and make sure you justify all your answers.

1. A warning about the practice exam: there maybe a few typos.

2. solve the following equations for x.

(a) $\frac{2x+3}{x+1} = 3$

(b) $2x + 7 \geq 9x - 9$

3. Let $f(x) = x^2 + 1$ and $g(x) = \frac{2}{2x+1}$

(a) find $f(g(x))$ and $g(f(x))$

(b) Find the inverse of $g(x)$.

4. Find the equation of the line that passes through $(1, 1)$ and $(2, 6)$.

5. Solve the system of equations $3x + 4y = 1$ and $2x - 3y = 12$

6. Suppose a safe investment pays 10 percent a year and a riskier one 18 percent a year. If you have 145000 to invest and would like to make 20,000 off your investment how much should you invest in each account?

7. Solve the following quadratic equations by either factoring or using the quadratic formula

a $x^2 - 1 = 0$

b $21x^2 - 7x + 1 = 0$

8. The daily profit from the sale of good x is given by $-5x^2 + 1000x + 500$ find the maximum profit from the sale of good x .

9. graph $(x - 3)^3 + 2$.

10. $A = \begin{pmatrix} 1 & 2 \\ 5 & 2 \end{pmatrix}$ $B = \begin{Bmatrix} 3 & 4 \\ 5 & 6 \end{Bmatrix}$ Find $A + B$ and $6A$.

11. Suppose that the demand and supply of a good are given by $p = -6q + 100$ and $p = 4q + 10$.
- (a) If a 20 dollar tax is levied on the supplier who passes it onto the consumer as a price increase find the equilibrium price and quantity before and after the tax.