

1. (5pts) Find the equation of the line that contains $(-1, 3)$ and is parallel to the line $3x - 2y = 4$. Sketch both lines on the same coordinate system.

2. (8pts) Solve the inequalities and write the solution in interval notation:

a) $5 < 2x - 4 \leq 6$

b) $|x - 3| \geq 5$

3. (3pts) Solve for t :

$$v = -gt + v_0$$

4. (4pts) Put the complex number into form $a + bi$.

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

5. (5pts) Determine algebraically (Pythagorean theorem or another method) if the triangle with vertices $A = (-2, 0)$, $B = (4, 7)$ and $C = (5, 1)$ is a right triangle.

6. (5pts) The equation $y = x^4 - 2x^3 - 5x^2 - x - 7$ is given.

a) Use your calculator to accurately sketch the graph of the equation on paper. Indicate your viewing window.

b) What is the y -intercept of the graph?

c) Using your calculator, find the smallest x -intercept accurate to three decimal points.

Solve the equations:

7. (4pts) $x^2 - 3x + 15 = 0$

8. (5pts) $\sqrt{7 - 2x} = x - 2$

9. (5pts) Find the equation of the circle whose diameter has endpoints at $(2, 7)$ and $(4, -1)$. Sketch the circle. (*Hint: what is the center? The radius?*)

10. (6pts) How many liters of a 10% solution of green needs to be added to 20 liters of a 50% solution of green in order to get a 20% solution? Don't forget to write down what your variable means.

Bonus (5pts) It takes Batman 50 minutes to wipe out a gang of bad guys. Superman can finish with the same gang in 30 minutes (after all, he can fly!). How long would it take them if they worked together?