Sheet #243: Algebra & Graphs 2

Name _____ Per/Sec. _____

Graphing calculator needed.

Simplify.

1. $(-a)(-a^3)(a^4)$

2. $\left(\frac{ab}{10}\right)^3$

3. $(7a^{-2}b^{-1})^{-2}$

Multiply.

4. $(5x - x^2 + 6)(3 - 7x)$

Factor.

5. $a^2 - 11a + 30$

6. $2a^2 - 25a - 13$

Simplify.

7. $\frac{2}{a^2} + \frac{7}{ab}$

8. $\frac{\sqrt{60}}{\sqrt{3}}$

9. $(6 + 3i) + (3 - 9i)$

10. $(9 + 10i)(2 + i)$

11. $\frac{-4}{-5 + i}$

12. $\frac{3 + 2i}{1 + i}$

Solve.

13. $3y^2 - y + 5 = 0$

14. $y^2 - 3y + 7 = 0$

15. Solve for p: $p^2 - 6pq + 9q^2 = 1$

16. Find two numbers whose sum is 346 and whose square roots differ by 4.

Graph.

17. $(x - 2)^2 + (y + 9)^2 = 36$

18. Find the equation of the circle with center $(-3, -2)$ and radius $r = 4\sqrt{6}$.

Write the equation of the line.

19. passes through $(1, 6)$ and $(-2, -9)$

20. A squash is launched vertically from ground ($y = 0$ m) at time = 0 s. Its height, y, is modeled to be $y = -5t^2 + 22t$ m above ground as a function of time, t, in seconds.

    a) At what time does the projectile reach its maximum height?

    b) What is the maxiumum height of the projectile?

    c) At what time will the projectile reach the ground?

21. Consider the equation $y = (x - 2)^2 - 5$.

    a) Sketch its graph. Label the axes with units and variables.

    b) Find the x and y coordinates of the vertex.

    c) Compared to its parent graph, $y = x^2$, how has the graph of the equation above been shifted and/or stretched?

    d) Find the y intercept.

    e) Find the x intercepts with a calculator. Round to 3 decimals.

    f) Solve for the x intercepts ALGEBRAICALLY, showing the steps.