

**Review Sheet for Test #1**

Factor Completely

1)  $14c^{12}d + 12c^8d^3$

3)  $100x^4 - y^{24}$

2)  $2x^2y^2 + 8x^5y^9$

4)  $36x^{36} - 25y^{10}$

Find the roots. Express your answer in simplest form when possible.

5)  $y = x^2 - 16x + 89$

6)  $y = 2x^2 + 5x - 9$

Find the x and y intercepts, identify the vertex, and sketch the parabola.

7)  $y = x^2 + 7x + 12$

8)  $y = x^2 - 2x - 8$

Graph the equation.

9)  $5y + 15 = -x$

10)  $y - 2x = 10$

11) Write the equation of the line that goes through the point (4, -2) and is perpendicular to  $4x + 3y = -6$ .

12) Write the equation of the line that goes through the points (-2, 3) and (4, 6).

Simplify and express your answer in a+bi form.

13)  $\frac{4+i}{2-5i}$

14)  $\frac{5-3i}{-9-7i}$

Simplify.

15)  $i^{101}$

16)  $i^{99}$

Solve the system of equations.

17)  $2y = x - 6$

$4x + y = -3$

18)  $2x - 5y = 7$

$3x - 10 = 13$

19)  $4x + 4y + z = 24$

$2x - 4y + z = 0$

$5x - 4y - 5z = 12$

20)  $x^2 + y^2 = 25$

$y^2 - x = 5$

Put in Vertex form.

21)  $y = 5x^2 + 90x - 30$

22)  $y = 3x^2 + 48x - 63$

Put the equation of the circle into standard form. Then identify the center and radius. Lastly, graph the circle on an xy axis, labeling the center and 4 points.

23)  $x^2 + 14x + y^2 - 20y - 47 = 0$

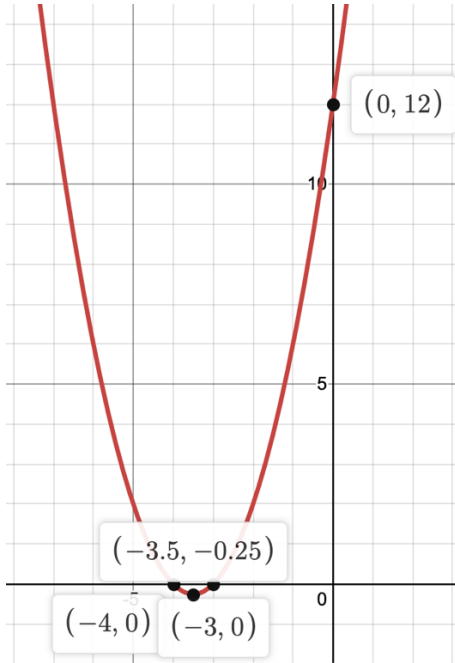
## Answer Key

1)  $14c^8d(7c^4 + 6d^2)$

3)  $(10x^2 + y^{12})(10x^2 - y^{12})$

5)  $8 \pm 5i$

7)



x-intercepts:  $(-3,0), (-4,0)$

y-intercept:  $(0,12)$

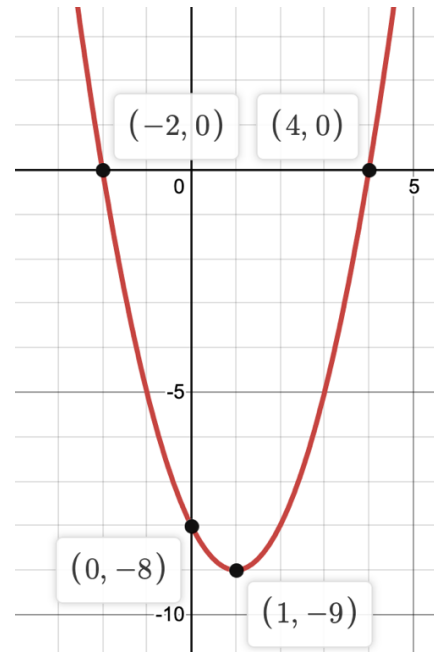
vertex:  $(-\frac{7}{2}, -\frac{1}{4})$

2)  $2x^2y^2(1 + 4x^3y^7)$

4)  $(6x^{18} - 5y^5)(6x^{18} + 5y^5)$

6)  $\frac{5 \pm \sqrt{97}}{4}$

8)

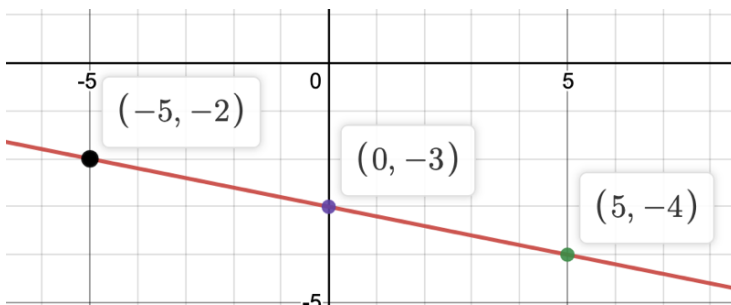


x-intercepts:  $(-2,0), (4,0)$

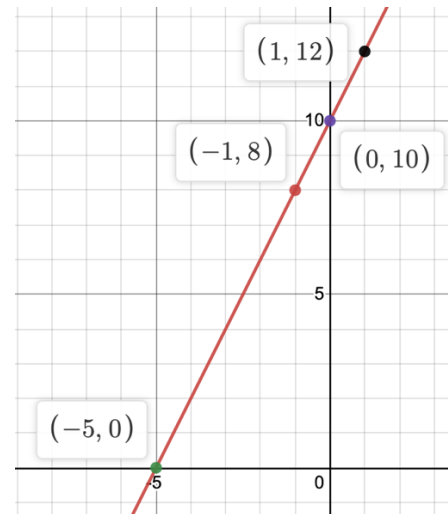
y-intercept:  $(0,8)$

vertex:  $(1, -9)$

9)  $y = -\frac{1}{5}x - 3$



10)  $y = 2x + 10$



### Answer Key (cont'd)

11)  $y = \frac{3}{4}x - 5$

13)  $\frac{3}{29} - \frac{22}{29}i$

15)  $i$

17)  $(0, -3)$

19)  $(4, 2, 0)$

21)  $y = 5(x + 9)^2 - 435$

23)  $(x + 7)^2 + (y - 10)^2 = 196$

12)  $y = \frac{1}{2}x + 4$

14)  $-\frac{12}{65} - \frac{31}{65}i$

16)  $-i$

18)  $(\frac{23}{3}, \frac{5}{3})$

20)  $(-5, 0), (4, -3), (4, 3)$

22)  $y = 3(x + 8)^2 - 255$

