

Answer Sheet

1	$x = \frac{5}{2} \pm \frac{\sqrt{13}}{2}$	✓ ✓	12	opens up	✓
2	$x = \frac{1}{4} \pm \frac{\sqrt{31}}{4}$	✓ ✓	13	$x = 3 + \sqrt{6} \approx 5.4$ $x = 3 - \sqrt{6} \approx 0.6$	✓ ✓
3	$x = 11$	✓	14	$(0, 3)$	✓
4	$x = 4$	✓	15	Use Graph on Test Sheet	✓ ✓
5	No real Solution	✓	16	$y = -2(x-3)^2 + 22$	✓ ✓
6	$x = 7$	✓	17	$(3, 22)$	✓ ✓
7	$x = 3 \pm \sqrt{13}$	✓ ✓	18	$x = 3$	✓
8	$x = 3 \pm \frac{\sqrt{26}}{2}$	✓ ✓	19	opens Down	✓
9	$y = (x-3)^2 - 6$	✓ ✓	20	$x = 3 + \sqrt{11} \approx 6.3$ $x = 3 - \sqrt{11} \approx -0.3$	✓ ✓
10	$(3, -6)$	✓ ✓	21	$(0, 4)$	✓
11	$x = 3$	✓	22	Use Graph on Test Sheet	✓ ✓

3 ✓ + 4 ✓

35 ✓

East Los Angeles College
Department of Mathematics
Math 125
Test 3

Show all work for credit.

Solve the following for x

1) $x^2 - 5x + 3 = 0$

2) $2x^2 - x + 4 = 0$

3) $\sqrt{x-2} = 3$

4) $2\sqrt{x} + 4 = 8$

5) $4\sqrt{x} = -12$

6) $5\sqrt{x+2} - 7 = 8$

Solve the following equations for x by completing the square.

7) $x^2 - 6x - 4 = 0$

8) $2x^2 - 12x + 5 = 0$

$$y = x^2 - 6x + 3$$

9. Complete the square to write in graphing form.

Determine:

10. Vertex

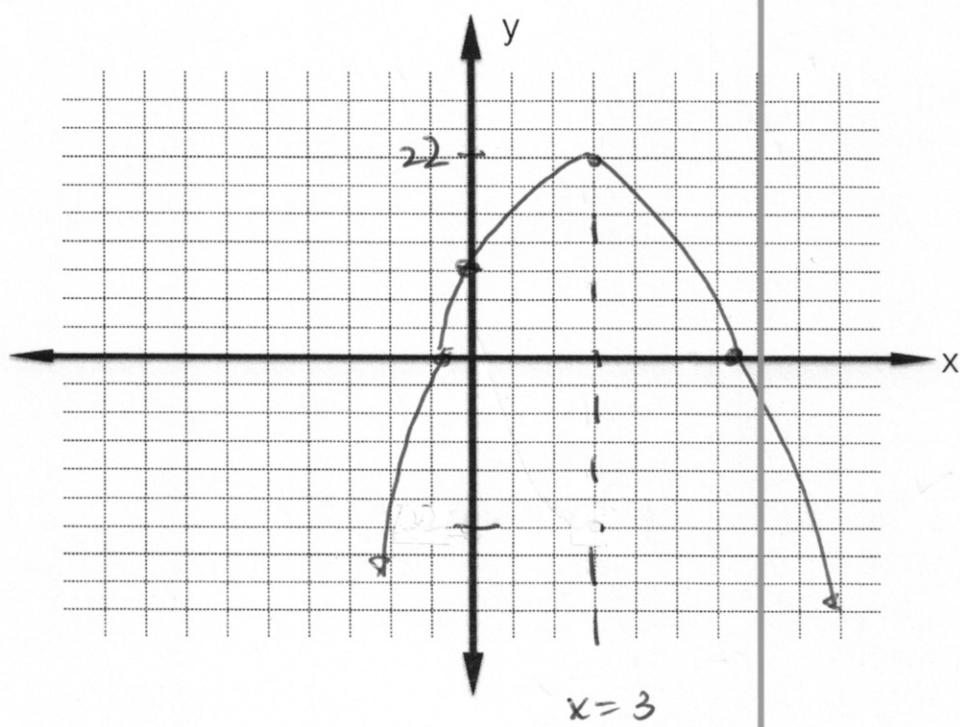
11. Axis of symmetry

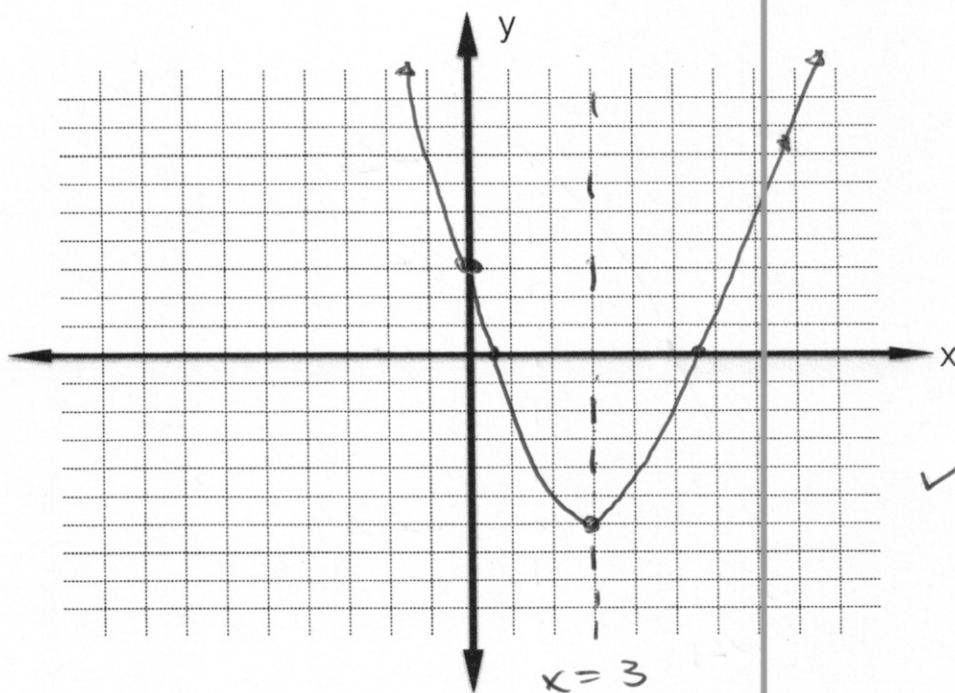
12. Opens up/down

13. x-intercepts, if any, see problem 1.

14. y-intercepts.

15. Sketch the curve.





$$y = -2x^2 + 12x + 4$$

16. Complete the square to write in graphing form.

Determine:

17. Vertex

18. Axis of symmetry

19. Opens up/down

20. x-intercepts, if any, see problem 3.

21. y-intercepts.

22. Sketch the curve.

Math 12S Test 3

(1) $x^2 - 5x + 3 = 0$

$a = 1, b = -5, c = 3$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} ; x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 1 \cdot 3}}{2 \cdot 1}$$

$$x = \frac{5 \pm \sqrt{25 - 12}}{2} ; x = \frac{5 \pm \sqrt{13}}{2}$$

$$x = \frac{5}{2} \pm \sqrt{\frac{13}{2}}$$

(2) $2x^2 - x + 4 = 0$

$a = 2, b = -1, c = 4$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{1 \pm \sqrt{31}}{4}$$

$$x = \frac{1}{4} \pm \sqrt{\frac{31}{4}} i$$

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4 \cdot 2 \cdot 4}}{2 \cdot 2}$$

$$x = \frac{1 \pm \sqrt{1 - 32}}{4}$$

$$x = \frac{1 \pm \sqrt{-31}}{4}$$

$$(3) \sqrt{x-2} = 3$$

$$x-2 = 3^2$$

$$x-2 = 9$$

$$+2 \quad +2$$

$$\boxed{x = 11}$$

$$(4) \begin{array}{r} 2\sqrt{x} + 4 = 8 \\ -4 \quad -4 \end{array}$$

$$\frac{2\sqrt{x}}{2} = \frac{4}{2}$$

$$\sqrt{x} = 2$$

$$x = 2^2 \quad \therefore \boxed{x = 4}$$

$$(5) \frac{4\sqrt{x}}{4} - \frac{12}{4}$$

$$\sqrt{x} = -3$$

No real solution

$$(6) \begin{array}{r} 5\sqrt{x+2} - 7 = 8 \\ +7 \quad +7 \end{array}$$

$$\frac{5\sqrt{x+2}}{5} = \frac{15}{5}$$

$$\sqrt{x+2} = 3$$

$$x+2 = 3^2 \quad \therefore \begin{array}{r} x+2 = 9 \\ -2 \quad -2 \end{array}$$

$$\boxed{x = 7}$$

$$(7) x^2 - 6x - 4 = 0$$

$$(1) \frac{-b}{2} = \frac{-(-6)}{2} = 3$$

$$(2) (-3)^2 = \underline{9}$$

$$\begin{array}{r} x^2 - 6x + 9 - 9 - 4 = 0 \\ \underline{f} \quad \underline{a} \end{array}$$

$$\begin{array}{r} (x-3)^2 - 13 = 0 \\ +13 \quad +13 \end{array}$$

$$(x-3)^2 = 13$$

$$\begin{array}{r} x-3 = \pm\sqrt{13} \\ +3 \quad +3 \end{array}$$

$$\boxed{x = 3 \pm \sqrt{13}}$$

$$(8) \frac{2x^2 - 12x + 5}{2} = \frac{0}{2}$$

$$\frac{2x^2}{2} - \frac{12x}{2} + \frac{5}{2} = 0$$

$$x^2 - 6x + \frac{5}{2} = 0$$

$$(1) \frac{-b}{2} = (-3) \quad (2) (-3)^2 = \underline{9}$$

$$\frac{x^2 - 6x + 9 - 9}{f} + \frac{5}{2} = 0$$

$$(x-3)^2 - 9 \cdot 2 + \frac{5}{2} = 0$$

$$(x-3)^2 - \frac{18}{2} + \frac{5}{2} = 0$$

$$(x-3)^2 - \frac{13}{2} = 0$$

$$+ \frac{13}{2} \quad + \frac{13}{2}$$

$$(x-3)^2 = \frac{13}{2}$$

$$x-3 = \pm \sqrt{\frac{13}{2}}$$

$$+3 \quad +3$$

$$x = 3 \pm \sqrt{\frac{13}{2}}$$

note $\sqrt{\frac{13}{2}} = \frac{\sqrt{13}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$$= \frac{\sqrt{26}}{2}$$

$$x = 3 \pm \frac{\sqrt{26}}{2}$$

$$(9) \quad y = x^2 - 6x + 3$$

$$(1) \quad -\frac{b}{2} = (-3)$$

$$(2) \quad (-3)^2 = \underline{9}$$

$$y = \frac{x^2 - 6x + 9}{f} - \frac{9 + 3}{a}$$

$$\boxed{y = (x-3)^2 - 6}$$

$$(10) \text{ Vertex } (3, -6)$$

$$(11) \quad x = 3$$

(12) opens up

(13) x-intercepts

$$(x-3)^2 - 6 = 0$$

$$(x-3)^2 = 6$$

$$x-3 = \pm\sqrt{6}$$

$$+3 \quad +3$$

$$x = 3 \pm \sqrt{6}$$

$$x = 3 + \sqrt{6} \quad ; \quad x = 3 - \sqrt{6}$$

$$\boxed{x = 5.4}$$

$$\boxed{x = 0.6}$$

$$(14) \text{ y-int}$$

$$y = 0^2 - 6 \cdot 0 + 3$$

$$\boxed{y = 3}$$

$$(16) \quad y = \frac{-2x^2 + 12x + 4}{-2}$$

$$\frac{y}{-2} = \frac{-2x^2}{-2} + \frac{12x}{-2} + \frac{4}{-2}$$

$$\frac{y}{-2} = x^2 - 6x - 2$$

complete the square

$$(1) \quad -\frac{b}{2} = (-3)$$

$$(2) \quad (-3)^2 = \underline{9}$$

$$\frac{y}{-2} = \frac{x^2 - 6x + 9 - 9 - 2}{f} \quad \frac{-2}{a}$$

$$\frac{y}{-2} = (x-3)^2 - 11$$

$$\boxed{y = -2(x-3)^2 + 22}$$

$$(17) \text{ Vertex } (3, 22)$$

$$(18) \quad x = 3$$

(19) opens Down

(20) x-int

$$0 = -2(x-3)^2 + 22$$

$$\begin{array}{r} -2(x-3)^2 + 22 = 0 \\ -22 \quad -22 \end{array}$$

$$\frac{-2(x-3)^2}{-2} = \frac{-22}{-2}$$

$$(x-3)^2 = 11$$

$$\begin{array}{r} x-3 = \pm \sqrt{11} \\ +3 \quad +3 \end{array}$$

$$x = 3 \pm \sqrt{11}$$

$$x = 3 + \sqrt{11} \quad ; \quad x = 3 - \sqrt{11}$$

$$(x \approx 6.3) \quad ; \quad (x = -0.3)$$

(21) y-int $y = -2.0^2 + 12.0 + 4$

$$(y = 4)$$

(22)