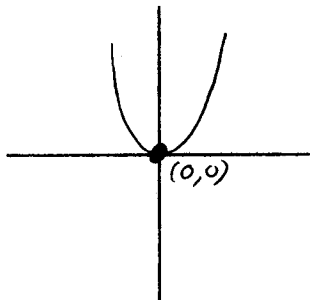


P-22 Find the x -intercept(s) (if any) of each parabola. Sketch each parabola showing the vertex, the y -intercept and any x -intercepts.

1. $y = x^2$

$$0 = x^2 \text{ when } x = 0$$

x -intercept is $(0,0)$



5. $y = (x+1)^2 - 9$

$$0 = (x+1)^2 - 9$$

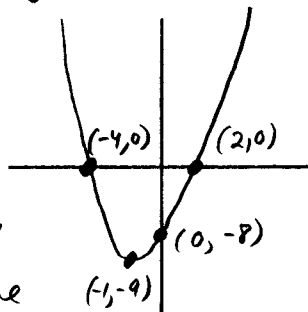
$$9 = (x+1)^2$$

$$\text{so } (x+1) = \pm 3$$

$$x+1=3 \text{ so } x=2$$

$$x+1=-3 \text{ so } x=-4$$

x -intercepts are $(2,0)$ and $(-4,0)$

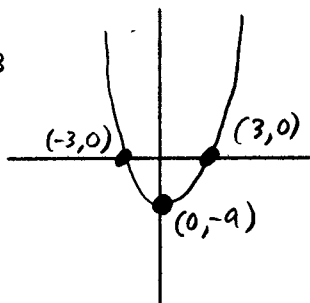


2. $y = x^2 - 9$

$$0 = x^2 - 9$$

$$9 = x^2 \text{ so } x = \pm 3$$

x -intercepts are $(3,0)$ and $(-3,0)$



6. $y = (x-2)^2 - 4$

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

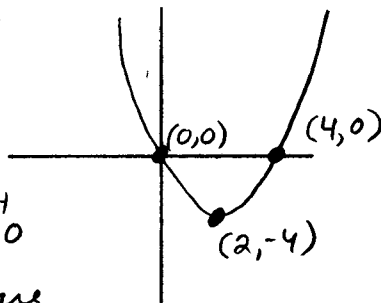
$$4 = (x-2)^2$$

$$\text{so } x-2 = \pm 2$$

$$x-2=2 \text{ so } x=4$$

$$x-2=-2 \text{ so } x=0$$

x -intercepts are $(4,0)$ and $(0,0)$

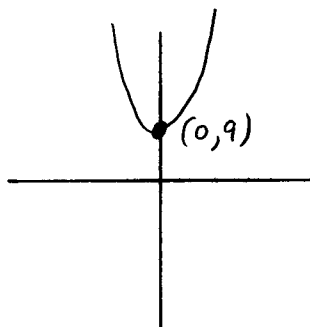


3. $y = x^2 + 9$

$$0 = x^2 + 9$$

$$-9 = x^2$$

↑ impossible!
no x -intercepts



7. $y = -3(x-2)^2 + 48$

$$0 = -3(x-2)^2 + 48$$

$$3(x-2)^2 = 48$$

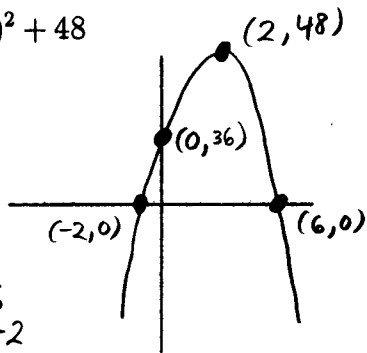
$$(x-2)^2 = 16$$

$$x-2 = \pm 4$$

$$x-2=4 \text{ so } x=6$$

$$x-2=-4 \text{ so } x=-2$$

x -intercepts are $(-2,0)$ and $(6,0)$



4. $y = 2x^2 - 8$

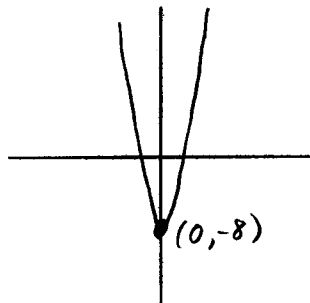
$$0 = 2x^2 - 8$$

$$8 = 2x^2$$

$$4 = x^2$$

$$\text{so } x = \pm 2$$

x -intercepts are $(2,0)$ and $(-2,0)$



8. $y = 3(x-2)^2 + 48$

$$0 = 3(x-2)^2 + 48$$

$$-48 = 3(x-2)^2$$

$$-16 = ()^2$$

↑ impossible!
no x -intercepts

