

December 5

① A) $(-2, 0): 0 = 4a - 2b + c$
 $(0, -4): -4 = c$
 $(-5, -9): -9 = 25a - 5b + c$

$$\begin{aligned} 4a - 2b &= 4 \\ 25a - 5b &= -5 \end{aligned}$$

$$\begin{aligned} 2a - b &= 2 \\ 5a - b &= -1 \end{aligned} \quad \left. \begin{array}{l} \\ \end{array} \right\} \begin{aligned} 3a &= -3 \\ a &= -1 \end{aligned}$$

Ans: $y = -x^2 - 4x - 4$

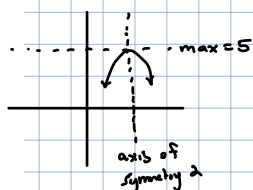
$$\begin{aligned} 2(-1) - b &= 2 \\ -b &= 4 \end{aligned} \quad \left. \begin{array}{l} \\ \end{array} \right\} \begin{aligned} b &= -4 \end{aligned}$$

Standard form

B) $y = a(x+4)^2 + 2$
 $6 = a(2)^2 + 2$
 $6 = 4a + 2$
 $a = 1$

Ans: $y = (x+4)^2 + 2$

C) Standard form



$$y = a(x-2)^2 + 5$$

$$0 = a(3)^2 + 5$$

$a = -5/9$

Ans: $y = -\frac{5}{9}(x-2)^2 + 5$

②

$$y = x^2 + ax + 4$$

so $a = -6$

this c must be 1

$$y = c(x-3)^2 - 5$$

$$y = (x-3)^2 - 5$$

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

$$= x^2 - 6x + 4$$

③

See Class Notes.

④

$$x^2 + 3x + x(x+2) = x(x+4) + 3x^2$$

$$x^2 + 3x + x^2 + 2x = x^2 + 4x + 3x^2$$

$$2x^2 + 5x = 4x^2 + 4x$$

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

method 1: factor

$$0 = 2x(x - 1/2)$$

$$x = 0, x = 1/2$$

method 2: Quad. formula.

$$x = \frac{1 \pm \sqrt{1 - 4(2)(0)}}{4}$$

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

$$x = 0, x = 1/2$$

* Use Calc to check answers for problems like this.

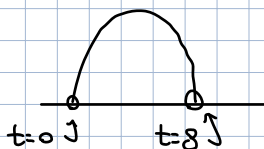
⑤

$$h(t) = -16t^2 + 128t$$

a) Need 2nd x-intercept. Solve: $0 = -16t^2 + 128t$

$$= -16t(t - 8)$$

8 seconds



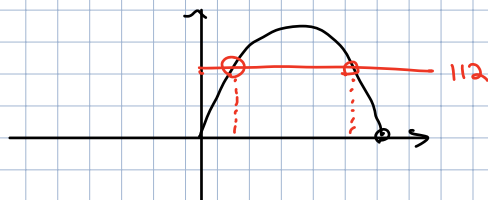
1st and 2nd

b) Solve: $112 = -16t^2 + 128t$...

$$x=1, x=7$$

1 second

and 7 seconds



c/d) Complete the square / use calculator...

maximum of 256 units after 4 seconds

Also: vertex occurs

$$\text{at } x = -\frac{b}{2a} = -\frac{(128)}{(-32)} = 4$$

* notice by symmetry this is half of its flying time from (a).