

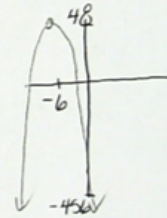
MC.

- |      |       |
|------|-------|
| 1. B | 8. A  |
| 2. B | 9. D  |
| 3. C | 10. B |
| 4. C | 11. B |
| 5. D | 12. D |
| 6. A | 13. D |
| 7. C | 14. C |

$$\begin{aligned}
 1. \quad y &= -14x^2 - 168x - 456 \\
 y &= -14(x^2 + 12x) - 456 \\
 y &= -14(x^2 + 12x + 36 - 36) - 456 \\
 y &= -14(x^2 + 12x + 36) + 504 - 456 \\
 y &= -14(x+6)^2 + 48
 \end{aligned}$$

- a) vertex  $(-6, 48)$
- b)  $x = -6$
- c)  $y \leq 48$
- d) max of 48

(e)



$$\begin{aligned}
 2. \quad h(t) &= -4.9t^2 + 34.3t + 32.25 \\
 h &= -4.9(t^2 - 7t) + 32.25 \\
 h &= -4.9(t^2 - 7t + 12.25 - 12.25) + 32.25 \\
 h &= -4.9(t^2 - 7t + 12.25) + 60.025 + 32.25 \\
 h &= -4.9(t - 3.5)^2 + 92.275
 \end{aligned}$$

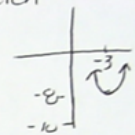
(a) height of 32.25 (the y-intercept when time is 0)

(b) max  $h = 92.275$

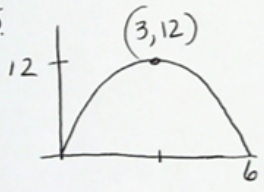
(c) 3.5 sec

(d)  $h = -4.9(4)^2 + 34.3(4) + 32.25 = 91.05m$

$$\begin{aligned}
 3. \quad y &= 5(x-3)^2 - 8 \quad \text{sketch} \\
 \text{vertex } &(3, -8) \\
 \text{opens up} & \\
 \text{range } &y \geq -8 \\
 \therefore \text{ No point} & \text{ where } y = -10
 \end{aligned}$$



4.  $y = a(x-h)^2 + k$   
 vertex  $(-12, 14)$   $y = a(x+12)^2 + 14$   
 point  $(-4, -2)$   $-2 = a(-4+12)^2 + 14$   
 $-2 = a(8)^2 + 14$   
 $-16 = 64a$   
 $-\frac{16}{64} = a$   
 $-\frac{1}{4} = a$   
 EQ'N  $y = -\frac{1}{4}(x+12)^2 + 14$

5.  vertex  $(3, 12)$   
 point  $(6, 0)$   
 $y = a(x-3)^2 + 12$   
 $0 = a(6-3)^2 + 12$   
 $0 = a(3)^2 + 12$   
 $-12 = 9a$   
 $-\frac{12}{9} = a$   
 $-\frac{4}{3} = a$   
 EQ'N  $y = -\frac{4}{3}(x-3)^2 + 12$