

Exam 1, Part I

- ① a) II b) V c) III d) IV      ② x-intercepts: 3, -2    y-intercepts: -6

Exam 1, Part II

- ①  $x=0, 5, -3$     ②  $f(x+5) = x^2 + 7x + 12$     ③  $x = -3, \cancel{-6}$  -6 doesn't check

- ④ a) 2    b) -5.5, 0, 3    c)  $[-3, 1]$     d)  $(-\infty, -5) \cup (-5, \infty)$

e) abs min of -2 at -3    f) rel max of 2 at 1

- ⑤ a)  $x \neq 1, 2$     b)  $[-2, 2]$     ⑥ a)  $c = \frac{ax+b-d}{x}$     b)  $x = \frac{d-b}{a-c}$  or  $x = \frac{b-d}{c-a}$

- ⑦ length = 19 inches, width = 7 inches

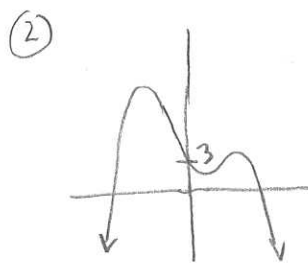
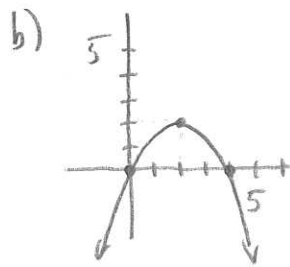
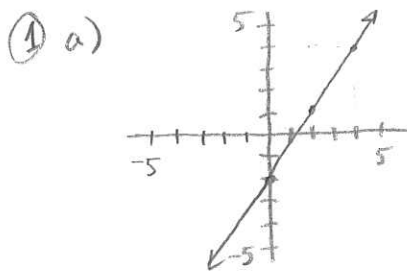
- ⑧ First one shouldn't have been there, because the quadratic formula is needed for it. The solution is  $x = \frac{-2 \pm 2\sqrt{7}}{12}$

For the second equation,  $x = 4, \cancel{-5}$  -5 doesn't check

For the third equation,  $x = 1, 3$

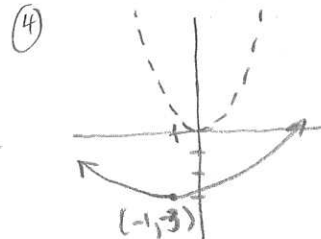
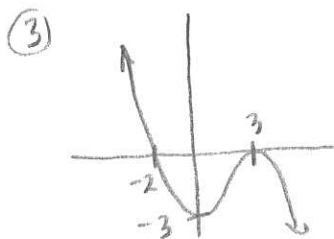
- ⑨ Domain:  $[-4, 4]$     Range:  $[-2, 2]$     Domain:  $(-\infty, \infty)$     Range:  $[-4, \infty)$     ⑪ 3    ⑫ 2.36 seconds  
 (-0.11 seconds not possible)

Exam 2, Part I



This could look a bit different, but should have

- both tails down
- 3 turning points (humps)
- y-intercept 3



- ⑤ a)  $(-3, 0)$     b) maximum value of 16 at  $x = 1$

Exam 2, Part II

①  $y = -\frac{1}{6}(x+6)(x-2)^2$

② As  $x \rightarrow -\infty, y \rightarrow \infty$   
 As  $x \rightarrow \infty, y \rightarrow -\infty$

- ③  $(-\infty, \frac{1}{3}] \cup [5, \infty)$     ④  $y = \frac{5}{4}x - \frac{11}{2}$     ⑤  $f(x) = -2(x-3)^2 + 25$     ⑥  $f(x) = \frac{3}{4}(x-3)^2 - 2$

- ⑦ a) 4.6 feet / month    b) 24ft, A blue whale is 24 feet long when it is born.

Exam 2, Part II, continued

- ⑧ Maximum height is 98.9 feet at 2.4 seconds  
 ⑨  $A = x \left( \frac{2400 - 2x}{3} \right)$  ⑩  $V = x(10 - 2x)(14 - 2x)$  ⑪  $d = \sqrt{(200 - 2t)^2 + (300 - 3t)^2}$

Exam 3, Part I

- ① a) -2, 2 b) -8 c)  $x = -1$  d)  $y = 2$  ② a) 2 b) -3 c)  $\frac{1}{2}$

Exam 3, Part II

- ①  $(f \circ g)(x) = -x^2 - x + 2$  ② a)  $g^{-1}(x) = 5x - 1$  b)  $h^{-1}(x) = (x - 2)^5 + 3$

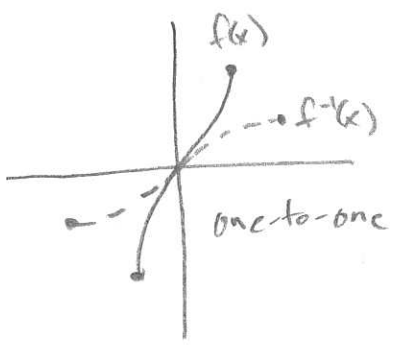
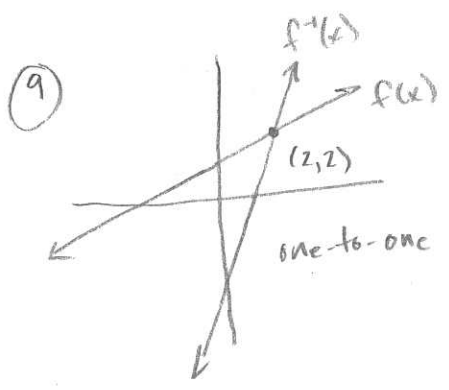
③

stretch by factor of 2 vertically      shift 1 to the right      Flip horizontally, then shift up 3

- ④ a)  $A = \$559.51$   
 b)  $W(5) = 185 \text{ mg}$   
 ⑤  $(-\infty, -5] \cup [-1, 2]$   
 ⑥ a) As  $x \rightarrow -2^+$ ,  $y \rightarrow \infty$   
 b) As  $x \rightarrow \infty$ ,  $y \rightarrow 1$

⑦  $(f \circ g)(x) = \frac{x^2 + 14x}{(x - 4)(x + 5)}$

- ⑧ Find  $(f \circ g)(x)$  and  $(g \circ f)(x)$ . Both come out equal to  $x$ , so the functions are inverses.



The third one is not one to one

- ⑩ a) between 7.5 and 10 hours  
 b) 200 fish