

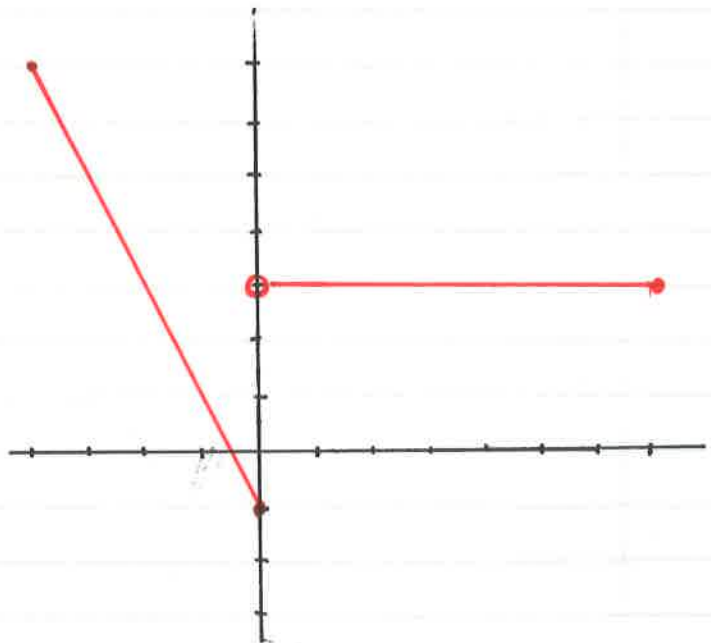
[EXAM 1 REVIEW] - (KEY)

1. $y = -\frac{2}{3}x$

2. a) $\text{dom}(p) := \{x \mid -4 \leq x < 7\}$ or $[-4, 7)$

b) $p(-2) = 3$
 $p(0) = -1$
 $p(6) = 3$

d) NOT CONTINUOUS



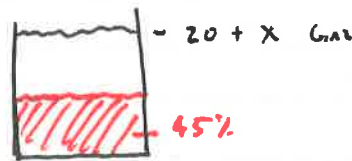
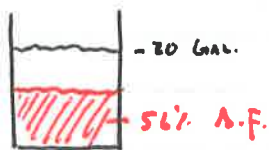
3. YES, slope is -4

4. $h(t) = -16t^2 + 100t + 6$

$$\frac{-b}{2a} = \frac{-100}{-32} = 3.125$$

↓
 $h(3.125) = 162.25 \text{ FT}$

5.



$$20(.56) = 11.2$$



GALLONS
OF A.F.

$$(20 + x)(.45)$$

$$11.2 = (20 + x)(.45)$$

$x = 4.89 \text{ gal.}$

6. a) $x = -\frac{2}{7}$ b) $x = 2 \pm \sqrt{5}$ c) $x = -7, -4$

7. $\text{dom}(f) := \{x \mid -3 < x\}$ or $(-3, \infty)$

$\text{ran}(f) := \{y \mid y < 4\}$ or $(-\infty, 4)$

8. 1.5

9. $\frac{f(x+h) - f(x)}{h} = \dots = \boxed{-2x + 2 - h}$

10. $\boxed{y = 3.25x - 2.45}$

11. absolute max: NONE

absolute min: -5

local min: -5 at $x = -3$

local max: -1

12. ~~.....~~ $f(x) \rightarrow -\infty$ as $x \rightarrow \pm\infty$

14. a) $\text{dom}(g) := \{x \mid x \neq \frac{1}{3}, -3\}$

b) $x = \frac{1}{3}$

c) $y = \frac{2}{3}$

15. LONG DIVISION YIELDS $\boxed{3x^2 - x + 3}$ (NO REMAINDER)

$$16. f(x) = \frac{-1}{4} (x+3)(x+2)(x+1)(x-2)$$

$$17. \text{ZEROS @ } x = \frac{1}{2}, -1, \pm 3$$

$$18. m(x) = (x-2)(x-i\sqrt{7})(x+i\sqrt{7})$$

- * I graphed $m(x)$ to find $x=2$, then used synthetic division
- * could also use reciprocal.

$$19. a) \left(x = 0, \pm 3i, 1 \right)$$

$$c) \left(x = -3, \frac{1 \pm 7i\sqrt{3}}{4} \right)$$

$$b) \text{ let } u = n^{-1}$$

$$\left(n = -2, \frac{1}{3} \right)$$

$$20. k(x) = 7 \left(x - \frac{3}{7} \right) \left(x - \left(\frac{-1-i\sqrt{7}}{2} \right) \right) \left(x - \left(\frac{-1+i\sqrt{7}}{2} \right) \right)$$

$$21. l(x) = (x-i)(x+i) \left(x - \left(\frac{1-i\sqrt{3}}{2} \right) \right) \left(x - \left(\frac{1+i\sqrt{3}}{2} \right) \right)$$

$$22. r(x) = \frac{-25x^2 - 67}{x^2 - 2} \quad (\text{ANSWERS MAY VARY})$$

$$23. a) x = 84$$

$$b) x = 4 \quad (x = -1 \text{ IS EXTRANEOUS})$$