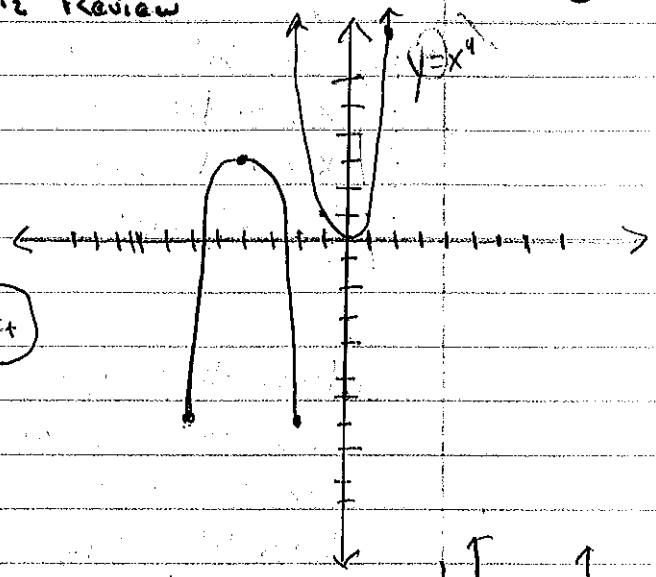
Ch. 2 Sections 2.1 - 2.3 Quiz Review

✓ (1)

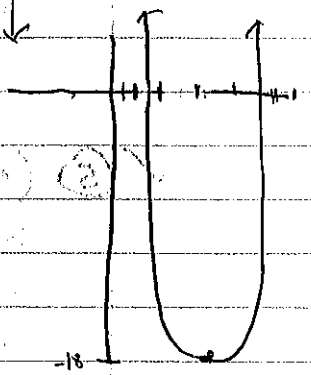
a) $y = -\frac{5}{8}(x+4)^4 + 3$

Reflected over x-axis, vertical compression, shifted 4 units left and 3 units up.



✓ b) $y = 3(x-4)^4 - 18$

Vertical stretch, shifted 4 units right and 18 units down.



✓ (2) $f(x) = x^2 + 24x - 7$

$y + 7 = x^2 + 24x + \_\_\_$ $\quad \frac{24}{2} = 12 \rightarrow (12)^2 = 144$

$y + 7 + 144 = x^2 + 24x + 144$

$y + 151 = (x+12)^2$

$f(x) = (x+12)^2 - 151$

$(-12, -151)$

$y = -3x^2 + 15x - 5$

$y + 5 = -3x^2 + 15x$

$y + 5 + (-3 \cdot \frac{25}{4}) = -3(x^2 - 5x + \frac{25}{4})$

$y + 5 - \frac{75}{4} = -3(x - \frac{5}{2})^2$ $\quad -\frac{5}{2} = (\frac{-5}{2})^2 =$

$y = -3(x - \frac{5}{2})^2 + \frac{55}{4}$

$(\frac{5}{2}, \frac{55}{4})$

✓ (3) $\frac{(x^4 - 3x^2 + 2)}{(x^2 - 1)}$

$x^2 - 2$

$$\begin{array}{r} x^2 - 2 \\ x^2 - 1 \overline{)\, x^4 + 0x^3 - 3x^2 + 0x + 2} \\ -(x^4 \quad + 1x^2) \\ \hline -2x^2 + 0x + 2 \\ -(-2x^2 \quad \pm 2) \\ \hline 0 \end{array}$$

④ a) $f(x)=6x^4+3x^3-4x^2-8$

$x\to+\infty$ $f(x)\to\infty$

$x\to\infty$ $f(x)\to\infty$

Rises left and Right

b) $f(x)=3x^2-9x^5+3x-2$

$f(x)=-9x^5+3x^2+3x-2$

$x\to-\infty$ $f(x)\to\infty$

$x\to\infty$ $f(x)\to-\infty$

rises left and falls right

c) $f(x)=-\frac{1}{2}x^6+4x^2-3$

$x\to-\infty$ $f(x)\to-\infty$

$x\to\infty$ $f(x)\to-\infty$

falls left and right

d) $f(x)=6x^3+4x+8x^5$

$f(x)=8x^5+6x^3+4x$

$x\to-\infty$ $f(x)\to-\infty$

$x\to\infty$ $f(x)\to\infty$

falls left and rises right

⑤ $(5,-3)$ vertex $(-1,6)$ point

$6=a(-1-5)^2-3$

$6=a(-6)^2-3$

$6=36a-3$

$9=36a$

$a=1/4$

$y=\frac{1}{4}(x-5)^2-3$

⑥ a) $f(x)=10x^3-24x^2-18x$

$0=2x[5x^2-12x-9]$

$0=2x[(5x^2-15x)(3x-9)]$

$5x(x-3)+3(x-3))$

$0=2x(5x+3)(x-3)$

$x=0$ $x=-3/5$ $x=3$

$\{-3/5, 0, 3\}$

b) $f(x)=2x^2-5x-12$

$0=(2x^2-8x)(3x-12)$

$0=2x(x-4)+3(x-4)$

$(2x+3)(x-4)=0$

$x=-3/2$ $x=4$

$\{-3/2, 4\}$

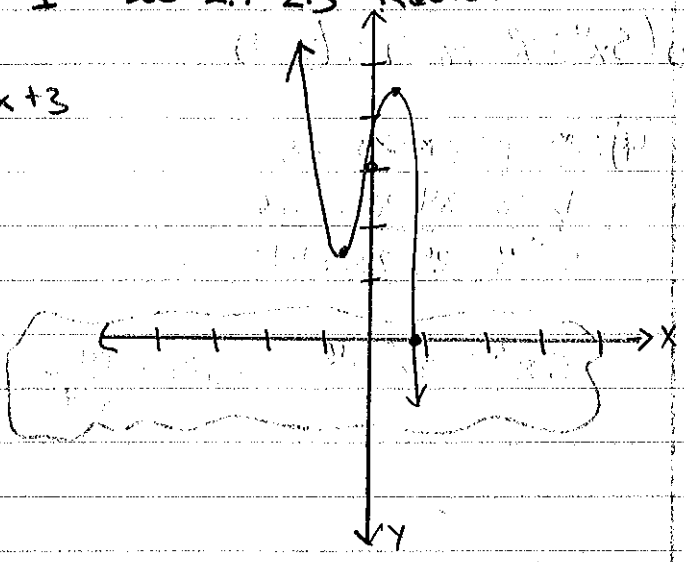
Ch. 2 Quiz 1 Sect. 2.1-2.3 Review

(7) $f(x) = -5x^5 - 3x^3 + 4x + 3$

$x \approx .96$

max: $(.51, 4.47)$

min: $(-.51, 1.53)$



(8) (a) $0, -3, 4, -4, 3$

$x=0 \quad x=-3 \quad x=4 \quad x=-4 \quad x=3$

$x(x+3)(x-3)(x+4)(x-4) = 0$

$x(x^2-9)(x^2-16) = 0$

$x(x^4 - 16x^2 - 9x^2 + 144)$

$x^5 - 25x^3 + 144x$

(b) $2, 3-\sqrt{7}, 3+\sqrt{7}$

$x-2=0 \quad x-3+\sqrt{7}=0 \quad x-3-\sqrt{7}=0$

$(x-2)(x-3+\sqrt{7})(x-3-\sqrt{7})$

$(x-2)(x^2 - 3x - x\sqrt{7} - 3x + 9 + 3\sqrt{7} + x\sqrt{7} - 3\sqrt{7} - 7)$

$(x-2)(x^2 - 6x + 2)$

$x^3 - 8x^2 + 14x - 4$

$x^3 - 6x^2 + 2x - 2x^2 + 12x - 4$

(9) $f(x) = 2x^3 - 11x^2 + 5x + 28$

$x = 4$

$4 \mid 2 \quad -11 \quad 5 \quad 28$

$\quad\quad\quad 8 \quad -12 \quad -28$

$2 \quad -3 \quad -7 \mid 0$

$2x^2 - 3x - 7 = 0$

$a=2 \quad b=-3 \quad c=-7$

$x = \dfrac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(-7)}}{2(2)}$

$x = \dfrac{+3 \pm \sqrt{65}}{4}$

$\left\{4, \dfrac{3 \pm \sqrt{65}}{4}\right\}$

(10) $(5x^4+x^3-7x-3) \div (x-4)$

4 | 5 | 0 | -7 | -3

↓ 20 | 84 | 336 | 1316

5 | 21 | 84 | 329 | 1313

$5x^3+21x^2+84x+329+\frac{1313}{x-4}$

(11) $f(x) = 9x^5+3x^2-5$

$PRZ = \frac{(c)}{(LC)} \quad \frac{-5}{9} \; ; \; \frac{\pm 1 \pm 5}{\pm 1, \pm 3, \pm 9}$

$\pm 1, \pm\frac{1}{3}, \pm\frac{1}{9}, \pm 5, \pm\frac{5}{3}, \pm\frac{5}{9}$

(12) $(7x^3+3x^2-8x-4) / (x+7)$

$f(-7) = 7(-7)^3+3(-7)^2-8(7)-4$

$f(-7) = -2202$

$r = -2202$

no it is not a factor because it has a remainder not equal to zero.

Ch.2 Quiz 1 Sections 2.1-2.3 Review

✓ (13) $(x-3)$, $(x+4)$ $f(x) = 2x^4+9x^3-47x^2-114x+360$

3	2	9	-47	-114	360
	↓	6	45	-6	-360
-4	2	15	-2	-120	0
	↓	-8	-28	120	
	2	7	-30	0	

$2x^2+7x-30$

$(2x^2+12x)(-5x-30)$

$2x(x+6)-5(x+6)$

$(2x-5)(x+6)=0$

$2x-5=0$ $x+6=0$

$x=5/2$ $x=-6$

$\{-6, -4, 5/2, 3\}$

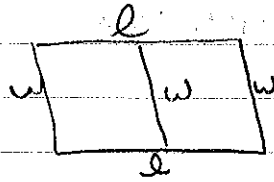
$7x$	-60
	$-1 \cdot 60$
	$-2 \cdot 30$
	$-3 \cdot 20$
	$-4 \cdot 15$
$-5x+12x$	$-5 \cdot 12$

(14) (69)

✓ (70) 122 units (71)

✓ (72) $2000

(15) $A = lw \quad P = 2l + 2w$



$6000 = 2l + 3w$

$6000 - 3w = 2l$

$3000 - \frac{3}{2}w = l$

$A = w(3000 - \frac{3}{2}w)$

$A = 3000w - \frac{3}{2}w^2$

$w = -\frac{b}{2a} \quad w = \frac{-3000}{2(-3/2)}$

$l = 3000 - \frac{3}{2}(1000)$

$l = 3000 - 1500$

$l = 1500$

$w = 1000$ ft

Dimensions: 1500 ft × 1000 ft

Max Area: 1,500,000 ft²

(16) Define Continuous

a graph is if it is extending with out break or irregularity.