

1 $(-1.3, -3.5)$ - absolute min

2 inc: $(-1.3, .2) \cup (1.1, \infty)$

3 local max: $(.2, .1)$

4 $(-3, 5]$

$$5 \frac{(p^2 q^4)^{1/2}}{(27 p^6 q^3)^{1/3}} = \frac{p q^2}{3 p^2 q} = \frac{q}{3 p}$$

6 odd

$$7 y = \left(-\frac{1}{4}(x-5)\right)^2 = y = \left(-\frac{1}{4}x + \frac{5}{4}\right)^2$$

Both are
correct

8 B

9 a) $g \circ f(-2)$

$$g \circ f(x) = (x^2 + 1)^2 + 6(x^2 + 1) - 2$$

$$g \circ f(-2) = ((-2)^2 + 1)^2 + 6((-2)^2 + 1) - 2$$

$$= 5^2 + 6(5) - 2 = \boxed{53}$$

b) $g + f(-3) = x^2 + 1 + x^2 + 6x - 2$

$$(-3)^2 + 1 + (-3)^2 + 6(-3) - 2$$

$$9 + 1 + 9 - 18 - 2 = \boxed{-1}$$

c) $(g \circ f)(4) = (x^2 + 1)(x^2 - 6x - 2)$

$$(4^2 + 1)(4^2 - (6)(4) - 2)$$

$$(17)(16 - 24 - 2)$$

$$(17)(-10) = \boxed{-170}$$

10 $(6, -2)$

11 $2 \overline{) 1 - 3 - 10 \quad 24}$

$$\underline{2 \quad -2 \quad -24}$$

$$x^2 - 1x - 12 \quad | 0$$

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

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

rational
root
thm

12. a) $\uparrow \downarrow$

$$\lim_{x \rightarrow \infty} f(x) = -\infty$$

$$\lim_{x \rightarrow -\infty} f(x) = \infty$$

b) $\uparrow \uparrow$

$$\lim_{x \rightarrow \pm \infty} f(x) = \infty$$

c) $\downarrow \uparrow$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

$$\lim_{x \rightarrow -\infty} f(x) = -\infty$$

13. $(-3)^5 - 2(-3)^4 + 3(-3)^2 - 20(-3) + 3 = \boxed{-315}$

14. $f(x) = (x-2)(x-i)(x+i)$
 $(x-2)(x^2+1)$
 $= \boxed{x^3 - 2x^2 + x - 2}$

15. D

16. C

17. $\frac{6x^2 + 12x - 18}{3x^2 + 30x + 63} = \frac{6(x^2 + 2x - 3)}{3(x^2 + 10x + 21)} = \frac{6(x+3)(x-1)}{3(x+7)(x+3)}$

$$= \frac{2(x-1)}{x+7} \quad \frac{2(-3-1)}{-3-7} = \frac{-8}{-10} = \frac{4}{5}$$

holes: $(3, -2)$
 H.A: $y = 2$
 V.A: $x = -7$
 x-int: $(1, 0)$
 y-int: $(0, -2/7)$

18. $y = \frac{(x-3)(x+?)}{(x-2)(x-3)} \Rightarrow \frac{(3+?)}{1} = 8$

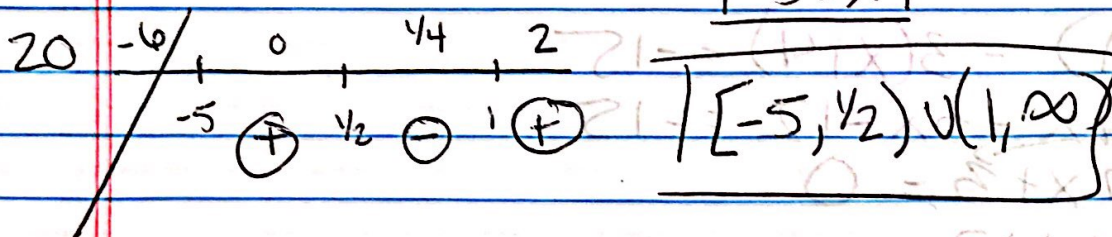
$$y = \frac{(x-3)(x+5)}{(x-2)(x-3)} \quad \begin{matrix} 3+? = 8 \\ ? = 5 \end{matrix}$$

$$= \boxed{y = \frac{x^2 + 2x - 15}{x^2 - 5x + 6}}$$

$$19. f(x) = \frac{\sqrt{x+5}}{(2x-1)(x-1)} \quad 0 = \sqrt{x+5}$$

$$0 = x+5$$

$$\underline{-5 = x}$$



21 $1.85^x = 2$

$$\frac{x \log 1.85}{\log 1.85} = \frac{\log 2}{\log 1.85}$$

$$\underline{x = 1.127}$$

22. $y = 23,000(1+0.012)^t$

A) $23,000(1.012)^4 = \underline{24,124 \text{ people}}$

B) $23,000(1.012)^t = 465,000$

$$1.012^t = 20.22$$

$$\frac{t \log 1.012}{\log 1.012} = \frac{\log 20.22}{\log 1.012}$$

$$\underline{t = 252 \text{ years}}$$

23 $x = \frac{5+y}{-2}$

$$-2x = 5+y$$

$$\underline{y = -2x - 5}$$

$$24. \frac{4x}{x+4} - \frac{3}{x-1} = \frac{-15}{(x+4)(x-1)}$$

$$4x(x-1) - 3(x+4) = -15$$

$$4x^2 - 4x - 3x - 12 = -15$$

$$4x^2 - 7x + 3 = 0$$

$$x^2 - 7x + 12$$

$$(x-3)(x-4)$$

$$\boxed{x = 3/4}$$

$$25. \log_6(x+1) - \log_6 x = \log_6 29$$

$$\log_6 \frac{x+1}{x} = \log_6 29$$

$$\frac{x+1}{x} = 29$$

$$x+1 = 29x$$

$$\boxed{1/28 = x}$$

26 skip