

Unit 2 Practice Test

$$1. a) 4(2-a)^2 - 81 = (2a-13)(2a+5)$$

$$= (4-2a+9)(4-2a-9)$$

$$= [2(2-a)+9][2(2-a)-9]$$

$$= b(a+b)+6(a+b) = (b+6)(a+b)$$

$$b) ab+b^2+6a+6b = 4x^2(2x+1)-(2x+1) = (4x^2-1)(2x+1)$$

$$= (2x+1)(2x-1)(2x+1) = (2x+1)^2(2x-1)$$

$$d) y^2 - x^2 - 8x - 16 = y^2 - (x^2 + 8x + 16)$$

$$= y^2 - (x+4)^2 = (y-x-4)(y+x+4)$$

$$= -(x-y+4)(x+y+4)$$

$$2. a) \frac{2x^2+5x-3}{x^3-x^2-12x} = \frac{(2x-1)(x+3)}{x(x-4)(x+3)}$$

$$= \frac{(2x-1)(x+3)}{(2x-1)(x+3)}$$

$$= \frac{x(x^2-x-12)}{x(x^2-x-12)}$$

$$= \frac{x^3-x^2-12x}{2x^2+5x-3}$$

$$b) \frac{1}{8xy} \times \frac{1}{15xy} \times \frac{1}{8xy} = \frac{1}{8^3 \cdot 15 \cdot x^3 y^3}$$

$$= \frac{1}{960x^3y^3}$$

$$= xy^2 \times \frac{4x}{3y} = \frac{4x^2y}{3}$$

$$= \frac{4}{3y^3} \quad xy \neq 0$$

$$= \frac{x(x-4)}{2x-1} \quad x \neq 0, -3, 4$$

$$d) \frac{3ab}{2} + \frac{a^2b^3}{3} - \frac{5a}{4} = \frac{10ab^2 + 4a^2b^3 - 12ab^3}{12}$$

$$= \frac{10ab^2 + 4a^2b^3 - 12ab^3}{12}$$

$$2) \frac{m^2+10m+25}{3} + \frac{m^2-9}{m-2m} \times \frac{2m+6}{m^2+3m-10}$$

$$= \frac{(m+5)^2}{3} + \frac{m(m-3)}{m(m-2)} \times \frac{2(m+3)}{(m+5)(m-2)}$$

$$= \frac{(m+5)^2}{3} + \frac{2m}{m-3} \times \frac{(m+5)(m-3)}{(m+5)(m-2)}$$

$$= \frac{3(m-3)+2m(m+5)}{3(m-3)(m+5)^2}$$

$$= \frac{3m-9+2m^2+10m}{3(m-3)(m+5)^2}$$

$$= \frac{2m^2+3m+1}{(m-3)(m+5)^2}$$

$m \neq -5, 2, \pm 3$

$x \neq -6, -3, 0, 3, 5$

$$= -\frac{4}{x(x+6)(x+3)}$$

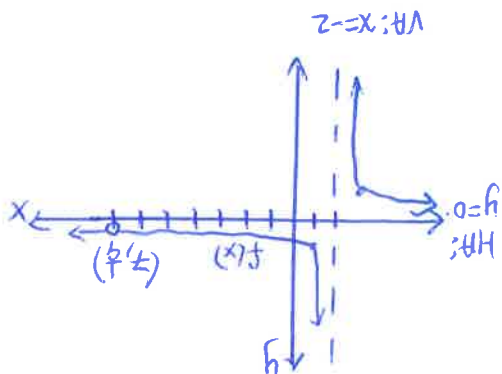
$$c) \frac{2x^2-6x}{2x^4-18x^2} \div \frac{x^2+x-30}{20-4x} = \frac{2x(x-3)}{2x^2(x-9)} \div \frac{-4(x-5)}{2x^2(x+3)}$$

$$= \frac{2x(x-3)}{2x^2(x-9)} \times \frac{2x^2(x+3)}{-4(x-5)}$$

$$= \frac{x(x+3)}{-4(x-5)}$$

∴ VA: $x = -2$, HA: $y = 0$, hole at $(\frac{7}{2}, \frac{9}{2})$.

$$\frac{9}{\frac{7}{2}} = \frac{f(\frac{7}{2})}{1} = \frac{f(\frac{7}{2})}{1}$$



$$\frac{x+2}{1} = \frac{(x-7)(x+2)}{(x-7)} = \frac{x^2 - 5x - 14}{x-7} = H.V. f(x)$$

$$= 16x^4 - 32x^3 + 24x^2 - 8x + 1 = (2x)^4 + 4(2x)^3(-1) + 6(2x)^2(-1)^2 + 4(2x)(-1)^3 + (-1)^4$$

c) $(2x-1)^4$

$$= x^5 + 10x^4 + 40x^3 + 80x^2 + 80x + 32$$

b) $(x+2)^5 = x^5 + 5x^4(2) + 10x^3(2)^2 + 10x^2(2)^3 + 5x(2)^4 + (2)^5$

$$= x^4 - 7x^2 + 7x + 3 = x^4 - \frac{7}{3}x^3 + 2x^2 + x + \frac{3}{3}x - \frac{9}{3}x^2 + 6x + 3$$

3, a) $(x+3)(x^3 - 3x^2 + 2x + 1)$

$$\frac{(x+y)(x-y)(2x+y)}{x-y+3} = \frac{(x+y)(x-y)}{x-y+3} \times \frac{2x+y}{x-y} = \frac{3(x-y)(x+y)}{3+x-y}$$

$$= \left(\frac{1}{1} \frac{(x-y)(x+y)}{(x-y)(x+y)} + \frac{3(x+y)}{1} \right) \times \frac{3(x-y)}{3(x-y)}$$

2.f) $\left(\frac{x^2 - y^2}{1} + \frac{3x + 3y}{1} \right) \times \frac{3x - 3y}{2x^2 - xy - y^2}$

∴ x-int: $(1,0), (1,0), (2,0)$

$$0 = (x+1)(x-1)(x-2)$$

$$0 = (x^2 - 1)(x-2)$$

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

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

$$x - \text{int}, f(x) = 0$$

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

1	5	10	5	1
1	4	6	4	1
1	3	3	1	
1	2	1		
1	1			
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