

## Station 1

Factor each of the following:

1.

$$24x^4y - 40x^2y^{-1}$$

2.

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

## Station 1

Factor each of the following:

1.

$$24x^4y - 40x^2y^{-1}$$

$$8x^2y^{-1}(3x^2y^2 - 5)$$

$$\frac{8x^2(3x^2y^2 - 5)}{y}$$

2.

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

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

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

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

$$x^4(12x^2 - 14x + 3)(2x-1)^{\frac{1}{2}}$$

$$\frac{x^4(12x^2 - 14x + 3)(2x-1)^{\frac{1}{2}}}{(2x-1)^{\frac{1}{2}}(2x-1)^{\frac{1}{2}}}$$

$$\frac{x^4(12x^2 - 14x + 3)(2x-1)^{\frac{1}{2}}}{(2x-1)}$$

36 - 1

18 · 2

12 3

9 4

6 6

## Station 2

Simplify:

$$1. \frac{x^{2n} - 1^{2n}}{x^n - 1^n}$$

2. Verify that  $y_1 = y_2$ .

$$y_1 = x^2 \left(\frac{1}{3}\right) (x^2 + 1)^{\frac{-2}{3}} (2x) + (x^2 + 1)^{\frac{1}{3}} (2x)$$

$$y_2 = \frac{2x(4x^2 + 3)}{3(x^2 + 1)^{\frac{2}{3}}}$$

## Station 2

Simplify:

1. 
$$\frac{x^{2n} - 1^{2n}}{x^n - 1^n}$$

$$\frac{\cancel{(x^n - 1^n)}(x^n + 1^n)}{\cancel{(x^n - 1^n)}}$$

$$a^2 - b^2 = (a-b)(a+b)$$

$$x^{2n} - 1^{2n}$$

$$\sqrt{a^2} = \sqrt{x^{2n}} = (x^{2n})^{1/2}$$

$$a = x^n$$

$$b^2 = 1^{2n} \rightarrow b = 1^n$$

$$\boxed{x^n + 1^n}$$

2. Verify that  $y_1 = y_2$ .

$$y_1 = x^2 \left(\frac{1}{3}\right) \cancel{(x^2 + 1)^{2/3}} (2x) + (x^2 + 1)^{1/3} \cancel{(2x)} = 2x(x^2 + 1)^{-2/3} \left(x^2 \left(\frac{1}{3}\right) + x^2 + 1\right)$$

$$y_2 = \frac{2x(4x^2 + 3)}{3(x^2 + 1)^{2/3}}$$

$$= \frac{2x \left(\frac{4}{3}x^2 + 1\right)}{(x^2 + 1)^{2/3}}$$

$$= 3 \cdot \frac{2x \left(\frac{1}{3}\right) (4x^2 + 3)}{(x^2 + 1)^{2/3}}$$

$$\boxed{\frac{2x(4x^2 + 3)}{3(x^2 + 1)^{2/3}}}$$

### Station 3

1. The width of a rectangular prism is 6cm, the height is 4cm and the length is "x". If the surface area is  $248 \text{ cm}^2$ , find the volume.



2. You invested a total \$10,000 at  $4 \frac{1}{2} \%$  and  $5 \frac{1}{2} \%$  simple interest. During 1 year, the two accounts earned \$508.75. How much did you invest in each?
3. A cylindrical can has a volume of  $200 \text{ cm}^3$  and a radius of 4 cm. Find the height of the can.

### Station 3

1. The width of a rectangular prism is 6cm, the height is 4cm and the length is "x". If the surface area is 248 cm<sup>2</sup>, find the volume.

$$SA = 2lw + 2lh + 2wh$$
$$248 = 2(6)4 + 2(6)x + 2(4)x$$
$$-48 \quad -48$$

$$200 = 20x$$

$$10 = x$$

$$V = 10 \times 6 \times 4$$
$$240 \text{ cm}^3$$

2. You invested a total \$10,000 at 4 ½ % and 5 ½% simple interest. During 1 year, the two accounts earned \$508.75. How much did you invest in each?

$$x + y = 10000$$

$$.045x + .055y = 508.75$$

$$4125$$

$$5875$$

3. A cylindrical can has a volume of 200 cm<sup>3</sup> and a radius of 4 cm. Find the height of the can.

$$V = \pi r^2 h$$

$$200 = \pi (4)^2 h$$

$$h \approx 3.98$$

## Station 4

Using a graphing calculator,

1. Find all intercepts of:  $y = -x^3 - x^2 - 3x - 3$

2. Solve the equation:  $-2.4x^2 - 3x + 1 = 7x - 5.4$

## Station 4

Using a graphing calculator,

1. Find all intercepts of:  $y = -x^3 - x^2 - 3x - 3$

$$x \text{ int } (-1, 0)$$

$$y \text{ int } (0, -3)$$

2. Solve the equation:  $-2.4x^2 - 3x + 1 = 7x - 5.4$

$$x = 0.564$$

$$x = -4.73$$