

EXERCISE 8.3
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Divide:

1. $x + 2x^2 + 3x^4 - x^5$ by $2x$

Solution:

We have,

$$(x + 2x^2 + 3x^4 - x^5) / 2x$$

$$x/2x + 2x^2/2x + 3x^4/2x - x^5/2x$$

 By using the formula $a^n / a^m = a^{n-m}$

$$1/2 x^{1-1} + x^{2-1} + 3/2 x^{4-1} - 1/2 x^{5-1}$$

$$1/2 + x + 3/2 x^3 - 1/2 x^4$$

2. $y^4 - 3y^3 + 1/2y^2$ by $3y$

Solution:

We have,

$$(y^4 - 3y^3 + 1/2y^2) / 3y$$

$$y^4/3y - 3y^3/3y + (1/2)y^2/3y$$

 By using the formula $a^n / a^m = a^{n-m}$

$$1/3 y^{4-1} - y^{3-1} + 1/6 y^{2-1}$$

$$1/3y^3 - y^2 + 1/6y$$

3. $-4a^3 + 4a^2 + a$ by $2a$

Solution:

We have,

$$(-4a^3 + 4a^2 + a) / 2a$$

$$-4a^3/2a + 4a^2/2a + a/2a$$

 By using the formula $a^n / a^m = a^{n-m}$

$$-2a^{3-1} + 2a^{2-1} + 1/2 a^{1-1}$$

$$-2a^2 + 2a + 1/2$$

4. $-x^6 + 2x^4 + 4x^3 + 2x^2$ by $\sqrt{2x^2}$

Solution:

We have,

$$(-x^6 + 2x^4 + 4x^3 + 2x^2) / \sqrt{2x^2}$$

$$-x^6/\sqrt{2x^2} + 2x^4/\sqrt{2x^2} + 4x^3/\sqrt{2x^2} + 2x^2/\sqrt{2x^2}$$

 By using the formula $a^n / a^m = a^{n-m}$

$$-1/\sqrt{2} x^{6-2} + 2/\sqrt{2} x^{4-2} + 4/\sqrt{2} x^{3-2} + 2/\sqrt{2} x^{2-2}$$

$$-1/\sqrt{2} x^4 + \sqrt{2x^2} + 2\sqrt{2x} + \sqrt{2}$$

5. $-4a^3 + 4a^2 + a$ by $2a$

Solution:

We have,

$$(-4a^3 + 4a^2 + a) / 2a$$

$$-4a^3/2a + 4a^2/2a + a/2a$$

By using the formula $a^n / a^m = a^{n-m}$

$$-2a^{3-1} + 2a^{2-1} + 1/2a^{1-1}$$

$$-2a^2 + 2a + 1/2$$

6. $\sqrt{3}a^4 + 2\sqrt{3}a^3 + 3a^2 - 6a$ by $3a$

Solution:

We have,

$$(\sqrt{3}a^4 + 2\sqrt{3}a^3 + 3a^2 - 6a) / 3a$$

$$\sqrt{3}a^4/3a + 2\sqrt{3}a^3/3a + 3a^2/3a - 6a/3a$$

By using the formula $a^n / a^m = a^{n-m}$

$$\sqrt{3}/3 a^{4-1} + 2\sqrt{3}/3 a^{3-1} + a^{2-1} - 2a^{1-1}$$

$$1/\sqrt{3} a^3 + 2/\sqrt{3} a^2 + a - 2$$