

## EXERCISE 8.6

**Divide:**

1.  $x^2 - 5x + 6$  by  $x - 3$

**Solution:**

We have,

$$(x^2 - 5x + 6) / (x - 3)$$

Let us perform long division method,

$$\begin{array}{r}
 x - 2 \\
 x - 3 \overline{) x^2 - 5x + 6} \\
 \underline{-} \\
 x^2 - 3x \\
 \underline{-} \\
 -2x + 6 \\
 \underline{-} \\
 -2x + 6 \\
 \underline{-} \\
 0
 \end{array}$$

∴ the Quotient is  $x - 2$

2.  $ax^2 - ay^2$  by  $ax + ay$

**Solution:**

We have,

$$(ax^2 - ay^2) / (ax + ay)$$

$$\begin{aligned}
 (ax^2 - ay^2) / (ax + ay) &= (x - y) + 0 / (ax + ay) \\
 &= (x - y)
 \end{aligned}$$

∴ the answer is  $(x - y)$

3.  $x^4 - y^4$  by  $x^2 - y^2$

**Solution:**

We have,

$$(x^4 - y^4) / (x^2 - y^2)$$

$$\begin{aligned}
 (x^4 - y^4) / (x^2 - y^2) &= x^2 + y^2 + 0 / (x^2 - y^2) \\
 &= x^2 + y^2
 \end{aligned}$$

∴ the answer is  $(x^2 + y^2)$

4.  $acx^2 + (bc + ad)x + bd$  by  $(ax + b)$

**Solution:**

We have,

$$\begin{aligned} & (acx^2 + (bc + ad)x + bd) / (ax + b) \\ & (acx^2 + (bc + ad)x + bd) / (ax + b) = cx + d + 0 / (ax + b) \\ & \qquad \qquad \qquad = cx + d \end{aligned}$$

∴ the answer is  $(cx + d)$

**5.  $(a^2 + 2ab + b^2) - (a^2 + 2ac + c^2)$  by  $2a + b + c$**

**Solution:**

We have,

$$\begin{aligned} & [(a^2 + 2ab + b^2) - (a^2 + 2ac + c^2)] / (2a + b + c) \\ & [(a^2 + 2ab + b^2) - (a^2 + 2ac + c^2)] / (2a + b + c) = b - c + 0 / (2a + b + c) \\ & \qquad \qquad \qquad = b - c \end{aligned}$$

∴ the answer is  $(b - c)$

**6.  $1/4x^2 - 1/2x - 12$  by  $1/2x - 4$**

**Solution:**

We have,

$$(1/4x^2 - 1/2x - 12) / (1/2x - 4)$$

Let us perform long division method,

$$\begin{array}{r} \frac{x}{2} + 3 \\ \hline \frac{x}{2} - 4 \overline{) \frac{x^2}{4} - \frac{x}{2} + 0} \\ \underline{\phantom{\frac{x}{2}} -} \\ \phantom{\frac{x}{2}} \frac{x^2}{4} - 2x \\ \phantom{\frac{x}{2}} \underline{\phantom{\frac{x}{2}} -} \\ \phantom{\frac{x}{2}} \phantom{\frac{x^2}{4}} \frac{3x}{2} + 0 \\ \phantom{\frac{x}{2}} \phantom{\frac{x^2}{4}} \underline{\phantom{\frac{x}{2}} -} \\ \phantom{\frac{x}{2}} \phantom{\frac{x^2}{4}} \phantom{\frac{3x}{2}} \frac{3x}{2} - 12 \\ \phantom{\frac{x}{2}} \phantom{\frac{x^2}{4}} \phantom{\frac{3x}{2}} \underline{\phantom{\frac{x}{2}} -} \\ \phantom{\frac{x}{2}} \phantom{\frac{x^2}{4}} \phantom{\frac{3x}{2}} 12 \end{array}$$

∴ the Quotient is  $x/2 + 3$