

EXERCISE 8.6
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Divide:

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

Solution:

We have,

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

Let us perform long division method,

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

 \therefore the Quotient is $x - 2$

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

Solution:

We have,

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

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

 \therefore the answer is $(x - y)$

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

Solution:

We have,

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

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

 \therefore 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,

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

∴ the Quotient is $x/2 + 3$