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EXERCISE 14.1 - Question No. 1

Find the common factors of the given terms. (i) $12x$, 36 (ii)

$2y$, $22xy$ (iii) $14pq$, $28p^2q^2$ (iv) $2x$, $3x^2$, 4 (v) $6abc$, $24ab^2$, $12a^2b$

(vi) $16x^3$, $-4x^2$, $32x$ (vii) $10pq$, $20qr$, $30rp$ (viii)

$3x^2y^3$, $10x^3y^2$, $6x^2y^2z$

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EXERCISE 14.1 - Question No. 2

Factorise the following expressions. (i) $7x - 42$ (ii) $6p - 12q$ (iii)

$7a^2 + 14a$ (iv) $-16z + 20z^3$ (v) $20l^2m + 30alm$ (vi)

$5x^2y - 15xy^2$ (vii) $10a^2 - 15b^2 + 20c^2$ (viii) $-4a^2 + 4ab - 4ca$

(ix) $x^2yz + xy^2z + xyz^2$ (x) $ax^2y + bxy^2 + cxyz$

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EXERCISE 14.1 - Question No. 3

Factorise. (i) $x^2 + xy + 8x + 8y$ (ii) $15xy - 6x + 5y - 2$ (iii)

$ax + bx - ay - by$ (iv) $15pq + 15 + 9q + 25p$ (v)

$z - 7 + 7xy - xyz$

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EXERCISE 14.2 - Question No. 1

Factorise the following expressions. (i) $a^2 + 8x + 16$ (ii)

$$p^2 - 10p + 25 \text{ (iii) } 25m^2 + 30m + 9 \text{ (iv) } 49y^2 + 84yz + 36z^2$$

$$\text{(v) } 4x^2 - 8x + 4 \text{ (vi) } 121b^2 - 88bc + 16c^2 \text{ (vii) } (l + m)^2 - 4lm$$

$$\text{(Hint : Expand } (l + m)^2 \text{) } \left. \vphantom{\text{(Hint : Expand } (l + m)^2 \text{)}} \right\} \text{ first (viii) } a^4 + 2a^2b^2 + b^4$$

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EXERCISE 14.2 - Question No. 2

Factorise. (i) $4p^2 - 9q^2$ (ii) $63a^2 - 112b^2$ (iii) $49x^2 - 36$ (iv)

$$16x^5 - 144x^3 \text{ (v) } (l + m)^2 - (l - m)^2 \text{ (vi) } 9x^2y^2 - 16 \text{ (vii)}$$

$$(x^2 - 2xy + y^2) - z^2 \text{ (viii) } 25a^2 - 4b^2 + 28bc - 49c^2$$

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EXERCISE 14.2 - Question No. 3

Factorise the expressions. (i) $ax^2 + bx$ (ii) $7p^2 + 21q^2$ (iii)

$2x^3 + 2xy^2 + 2xz^2$ (iv) $am^2 + bm^2 + bn^2 + an^2$ (v)

$(lm + l) + m + 1$ (vi) $y(y + z) + 9(y + z)$ (vii)

$5y^2 - 20y - 8z + 2yz$ (viii) $10ab + 4a + 5b + 2$ (ix)

$6xy - 4y + 6 - 9x$

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EXERCISE 14.2 - Question No. 4

Factorise. (i) $a^4 - b^4$ (ii) $p^4 - 81$ (iii) $x^4 - (y + z)^4$ (iv)

$x^4 - (x - z)^4$ (v) $a^2 - 2a^2b^2 + b^4$

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EXERCISE 14.2 - Question No. 5

Factorise the following expressions. (i) $p^2 + 6p + 8$ (ii)

$q^2 - 10q + 21$ (iii) $p^2 + 6p - 16$

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EXERCISE 14.3 - Question No. 1

Carry out the following divisions. (i) $28x^4 \div 56x$ (ii)

$-36y^3 \div 9y^2$ (iii) $66pq^2r^3 \div 11qr^2$ (iv) $34x^3y^3z^3 \div 51xy^2z^3$ (v)

$12a^8b^8 \div (-6a^6b^4)$

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EXERCISE 14.3 - Question No. 2

Divide the given polynomial by the given monomial. (i)

$(5x^2 - 6x) \div 3x$ (ii) $(3y^8 - 4y^6 + 5y^4) \div y^4$ (iii)

$8(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3) \div 4x^2y^2z^2$ (iv)

$(x^3 + 2x^2 + 3x) \div 2x$ (v) $(p^3q^6 - p^6q^3) \div p^3q^3$

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EXERCISE 14.3 - Question No. 3

Work out the following divisions. (i) $(10x - 25) \div 5$ (ii)

$(10x - 25) \div (2x - 5)$ (iii) $10y(6y + 21) \div 5(2y + 7)$ (iv)

$96abc(3a - 12)(5b - 30) \div 144(a - 4)(b - 6)$

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EXERCISE 14.3 - Question No. 4

Divide as directed. (i) $5(2x + 1)(3x + 5) \div (2x + 1)$ (ii)

$26xy(x + 5)(y - 4) \div 13x(y - 4)$ (iii)

$52pqr(p + q)(p + r)(r + p) \div 104pq(q + r)(r + p)$

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EXERCISE 14.3 - Question No. 5

Factorise the expressions and divide them as directed. (i)

$$(y^2 + 7y + 10) \div (y + 5) \quad \text{(ii)} \quad (m^2 - 14m - 32) \div (m + 2) \quad \text{(iii)}$$

$$(5p^2 - 25p + 20) \div (p - 1) \quad \text{(iv)}$$

$$(4yz(z^2 + 6z - 16) \div 2y(z + 8) \quad \text{(v)} \quad 5pq(p^2 - q^2) \div 2p(p + q)$$

$$\text{(vi)} \quad 12xy(9x^2 - 16y^2) \div 4xy(3x + 4y) \quad \text{(vii)}$$

$$39y^3(50y^2 - 98) \div 26y^2(5y + 7)$$

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EXERCISE 14.4 - Question No. 1

Find and correct the errors in the mathematical statements.

$$4(x - 5) = 4x - 5$$

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EXERCISE 14.4 - Question No. 2

Find and correct the errors in the mathematical statements.

$$x(3x + 2) = 3x^2 + 2$$

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EXERCISE 14.4 - Question No. 3

Find and correct the errors in the mathematical statements.

$$2x + 3y = 5xy$$

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EXERCISE 14.4 - Question No. 4

Find and correct the errors in the mathematical statements.

$$x + 2x + 3x = 5x$$

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EXERCISE 14.4 - Question No. 5

Find and correct the errors in the mathematical statements.

$$5y + 2y + y - 7y = 0$$

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EXERCISE 14.4 - Question No. 6

Find and correct the errors in the mathematical statements.

$$3x + 2x = 5x^2$$

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EXERCISE 14.4 - Question No. 7

Find and correct the errors in the mathematical statements.

$$(2x)^2 + 4(2x) + 7 = 2x^2 + 8x + 7$$

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EXERCISE 14.4 - Question No. 8

Find and correct the errors in the mathematical statements.

$$(2x)^2 + 5x = 4x + 5x = 9x$$

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EXERCISE 14.4 - Question No. 9

Find and correct the errors in the mathematical statements.

$$(3x + 2)^2 = 3x + 6x + 4$$

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EXERCISE 14.4 - Question No. 10

Substituting $x = -3$ in $x^2 + 5x$ gives

$$(-3)^2 + 5(-3) = -9 - 15 = -24$$

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EXERCISE 14.4 - Question No. 11

$$(y - 3)^2 = y^2 - 9$$

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EXERCISE 14.4 - Question No. 12

$$(z + 5)^2 = z^2 + 25$$

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EXERCISE 14.4 - Question No. 13

$$(2a + 3b)(a - b) = 2a^2 - 3b^2$$

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EXERCISE 14.4 - Question No. 14

$$(a + 4)(a - + 2) = a^2 + 8$$

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EXERCISE 14.4 - Question No. 15

$$(a - 4)(a - 2) = a^2 - 8$$

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EXERCISE 14.4 - Question No. 16

$$\frac{3x^2}{3x^2} = 0$$

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EXERCISE 14.4 - Question No. 17

$$\frac{3x^2 + 1}{3x^2} = 1 + 1 = 2$$

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EXERCISE 14.4 - Question No. 18

$$\frac{3x}{3x + 2} = \frac{1}{2}$$

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EXERCISE 14.4 - Question No. 19

$$\frac{3}{4x + 3} = \frac{1}{4x}$$

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EXERCISE 14.4 - Question No. 20

$$\frac{4x + 5}{4x} = 5$$

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EXERCISE 14.4 - Question No. 21

$$\frac{7x + 5}{5} = 7x$$

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SOLVED EXAMPLES - Question No. 1

Factorise $12a^2b + 15ab^2$

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SOLVED EXAMPLES - Question No. 2

Factorise : $10x^2 - 18x^3 + 14x^4$

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SOLVED EXAMPLES - Question No. 3

Factorise : $6xy - 4y + 6 - 9x.$

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SOLVED EXAMPLES - Question No. 4

Factorise : $x^2 + 8x + 16$

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SOLVED EXAMPLES - Question No. 5

Factorise : $4y^2 - 12y + 9$

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SOLVED EXAMPLES - Question No. 6

Factorise : $49p^2 - 36$

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SOLVED EXAMPLES - Question No. 7

Factorise $a^2 - 2ab + b^2 - c^2$

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SOLVED EXAMPLES - Question No. 8

Factorise: Example 7: $a^2 - 2ab + b^2 - c^2$. Example 8: $m^4 - 256$

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SOLVED EXAMPLES - Question No. 9

Factorise : $x^2 + 5x + 6$

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SOLVED EXAMPLES - Question No. 10

Find the factors of $y^2 - 7y + 12$

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SOLVED EXAMPLES - Question No. 11

Obtain the factors of $z^2 - 4z - 12$.

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SOLVED EXAMPLES - Question No. 12

Find the factors of $3m^2 + 9m + 6$.

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SOLVED EXAMPLES - Question No. 13

Do the following divisions. (i) $-20x^4 \div 10x^2$ (ii)

$$7x^2y^2z^2 \div 14xyz$$

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SOLVED EXAMPLES - Question No. 14

Divide $24(x^2yz + xy^2z + xyz^2)$ by $8xyz$ using both the methods.

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SOLVED EXAMPLES - Question No. 15

Divide $44(x^4 - 5x^3 - 24x^2)$ by $11x(x - 8)$

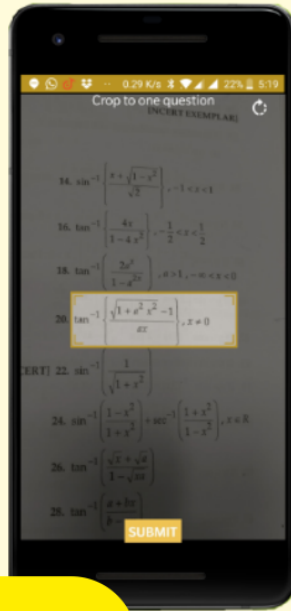
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SOLVED EXAMPLES - Question No. 16

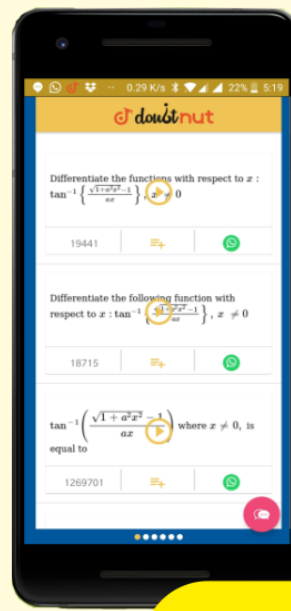
Divide $z(5z^2 - 80)$ by $5z(z + 4)$

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