

Practice Quiz: Factoring

1) $x^2 - 16$

7) $3x^4 - 48$

2) $12y^4 - 8y^5 + 6y^2$

8) $49x^2 - 84x + 36$

3) $3x^2 - 75$

9) $x^3 - 2x^2 + x$

4) $x^2 - 12x + 36$

10) $27x^3 + 36x^2 + 12x$

5) $45x^2 + 60x + 20$

11) $15x^3y^5 - 10x^2y^6 + 20x^5y^3$

6) $6x^3 + 9x^2 - 3x$

12) $25x^2 - 4$

Practice Quiz Answers & Tips

→Quiz Answers

$$1) \quad x^2 - 16 \\ = x^2 - 16$$

$$= (x + 4)(x - 4)$$

$$2) \quad 12y^4 - 8y^5 + 6y^2 \\ = 2y^2(6y^2 - 4y^3 + 3)$$

$$3) \quad 3x^2 - 75 \\ = 3(x^2 - 25) \\ = 3(x^2 - 5^2) \\ = 3(x + 5)(x - 5)$$

$$4) \quad x^2 - 12x + 36 \\ = (x - 6)^2$$

$$5) \quad 45x^2 + 60x + 20 \\ = 5(9x^2 + 12x + 4) \\ = 5(3x + 2)^2$$

$$6) \quad 6x^3 + 9x^2 - 3x \\ = 3x(2x^2 + 3x - 1)$$

$$7) \quad 3x^4 - 48 \\ = 3(x^4 - 16) \\ = 3((x^2)^2 - (4)^2) \\ = 3(x^2 + 4)(x^2 - 4) \\ = 3(x^2 + 4)(x + 2)(x - 2) \\ = 3(x^2 + 4)(x + 2)(x - 2)$$

$$8) \quad 49x^2 - 84x + 36 \\ = (7x - 6)^2$$

$$9) \quad x^3 - 2x^2 + x \\ = x(x^2 - 2x + 1) \\ = x(x - 1)^2$$

$$10) \quad 27x^3 + 36x^2 + 12x \\ = 3x(9x^2 + 12x + 4) \\ = 3x(3x + 2)^2$$

$$11) \quad 15x^3y^5 - 10x^2y^6 + 20x^5y^3 \\ = 5x^2y^3(3xy^2 - 2y^3 + 4x^3)$$

$$12) \quad 25x^2 - 4 \\ = (5x)^2 - (2)^2 \\ = (5x + 2)(5x - 2)$$

→Tips

We know about 3 types of factoring:

- 1) Factoring out a monomial (e.g. problems 2, 6 & 11)
Also known as “taking the biggest thing out of each term”
- 2) Factoring using the difference of squares rule (e.g. problems 1, 3, 7 & 12)
- 3) Factoring using the trinomial squares rule (e.g. problems 4, 5, 8, 9 & 10)

Special notes about the problems:

- 1) Problem 7 uses the difference of squares rule twice!
- 2) In problems 3, 5, 7, 9, 10, 11 and 14, the first step was to factor out a monomial. Don't forget to always check to see if you can take something out of each term!
- 3) Another reminder: If in doubt or if you have extra time, check your answers by multiplying