Factor Theorem and Synthetic Division Worksheet

MATH MONKS

① Use the factor theorem to identify whether the divisor is a factor of the given polynomial and write 'Yes' or 'No' in the blanks.

(a) $(3x^3 + 5x^2 + 8x - 7) \div (x - 2)$

(b) $(-7b^3 - 8b^2 + 15b + 23) \div (b + 2)$

(c) $(2a^3 + 3a^2 - 17a - 30) \div (a + 2)$

(d) $(2p^3 - 3p^2 - 11p + 6) \div (p + 2)$

② Use synthetic division to identify whether the divisor is a factor. Write 'Yes' or 'No' in the blanks.

(a) $(a^3 + 4a^2 + 1) \div (a + 4)$

(b) $(x^3 + 2x^2 + 3x + 2) \div (x + 1)$

(c) $(3a^3 + 4a^2 - 5a + 7) \div (a - 3)$

(d) $(x^3 + 3x^2 + 3x + 1) \div (x + 1)$

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Answers

① Use the factor theorem to identify whether the divisor is a factor of the given polynomial and write 'Yes' or 'No' in the blanks.

(a) $(3x^3 + 5x^2 + 8x - 7) \div (x - 2)$

No

(b) $(-7b^3 - 8b^2 + 15b + 23) \div (b + 2)$

No

(c) $(2a^3 + 3a^2 - 17a - 30) \div (a + 2)$

Yes

(d) $(2p^3 - 3p^2 - 11p + 6) \div (p + 2)$

Yes

② Use synthetic division to identify whether the divisor is a factor. Write 'Yes' or 'No' in the blanks.

(a) $(a^3 + 4a^2 + 1) \div (a + 4)$

No

(b) $(x^3 + 2x^2 + 3x + 2) \div (x + 1)$

Yes

(c) $(3a^3 + 4a^2 - 5a + 7) \div (a - 3)$

No

(d) $(x^3 + 3x^2 + 3x + 1) \div (x + 1)$

Yes