2.2 Synthetic Division Worksheet

This document was composed and formatted by Annie Bernatchez.

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1) Calculate each of the following using synthetic division. Express your answer using the statement that could be used to check the division.

a) $x^3 - 7x - 6$ divided by $x - 3$

b) $2x^3 - 7x^2 - 7x + 19$ divided by $x - 1$

c) $6x^4 + 13x^3 - 34x^2 - 47x + 28$ divided by $x + 3$

d) $2x^3 + x^2 - 22x + 20$ divided by $2x - 3$

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e) $12x^4 - 56x^3 + 59x^2 + 9x - 18$ divided by $2x + 1$

f) $6x^3 - 15x^2 - 2x + 5$ divided by $2x - 5$

g) $x^3 - 2x + 1$ divided by $x - 4$

h) $x^3 + 2x^2 - 6x + 1$ divided by $x + 2$

2) Divide $x^4 - 16x^3 + 4x^2 + 10x - 11$ by each of the following binomials…

a) $x - 2$

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b) $x + 4$

3) Are either of the binomials in question #2 factors of $x^4 - 16x^3 + 4x^2 + 10x - 11$? Explain.

Answer Key

1) a) $x^2 + 3x + 2$, remainder 0 b) $2x^2 - 5x - 12$, remainder 7 c) $6x^3 - 5x^2 - 19x + 10$, remainder -2 d) $x^2 + 2x - 8$, remainder -4 e) $6x^3 - 31x^2 + 45x - 18$, remainder 0 f) $3x^2 - 1$, remainder 0 g) $x^2 + 4x + 14$, remainder 57 h) $x^2 - 6$, remainder 13

2) a) $x^3 - 14x^2 - 24x - 38$, remainder -87 b) $x^3 - 20x^2 + 84x - 326$, remainder 1293

3) No — dividing by each binomial leaves a non-zero remainder (-87 and 1293 respectively).

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