Algebra 3 Assignment # 4

(1) Divide each of the following please.

(a) $\left(x^4 + 4x^3 + 3x^2 - 4x - 4\right) \div (x + 2)$

(b) $\left(7x^4 - 14x^3 - 6x^2 + 17x - 6\right) \div (x - 2)$

(c) $\left(2x^4 + 5x^3 + 50x + 12\right) \div (x + 4)$

(d) $\left(6x^3 + 13x^2 - 17x + 4\right) \div (3x - 1)$

(e) $\left(10x^3 - 3x^2 + 2x + 8\right) \div (2x + 1)$

(f) $\left(x^5 - 1\right) \div (x - 1)$

(2) Use the given root to find the remaining roots for each of the following please.

(a) $2x^3 + 13x^2 + 9x - 30$, given -5 is a root.

(b) $2x^3 - 5x^2 - 8x + 6$, given $-\frac{3}{2}$ is a root.

(c) $x^4 + 4x^3 + 3x^2 - 4x - 4$, given -2 is a root.

(d) $2x^4 + 3x^3 - 29x^2 - 18x + 72$, given 3 and -2 are roots.

(3) Write a polynomial having 1 , 2 , and –4 as roots.

(4) Let $f(x) = 2x^4 - 3x^3 - 5x^2 + cx - 3$. Find the value of c if $f(3) = 45$.

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Answers

(1) **(a)** $x^3 + 2x^2 - x - 2$

(b) $7x^3 - 6x + 5 + \dfrac{4}{x - 2}$

(c) $2x^3 - 3x^2 + 12x + 2 + \dfrac{4}{x + 4}$

(d) $2x^2 + 5x - 4$

(e) $5x^2 - 4x + 3 + \dfrac{5}{2x + 1}$

(f) $x^4 + x^3 + x^2 + x + 1$

(2) **(a)** the roots are -5 , $\dfrac{-3 \pm \sqrt{57}}{4}$

(b) the roots are $-\frac{3}{2}$, $2 \pm \sqrt{2}$

(c) the roots are -2 , -2 , ± 1

(d) the roots are -4 , -2 , 3 , $\frac{3}{2}$

(3) $x^3 + x^2 - 10x + 8$

(4) $c = 4$