Algebra 3 Assignment # 5

Find all roots of each of the following please.

(1) $2x^3 + 3x^2 - 8x + 3 = 0$

(2) $x^4 + 5x^3 + 4x^2 - 8x - 8 = 0$

(3) $x^5 - 4x^3 - x^2 + 4 = 0$

(4) $3x^4 - 10x^3 + 6x^2 + 2x - 1 = 0$

(5) $12x^4 - 12x^3 - x^2 + 4x - 1 = 0$

(6) $x^4 + x^3 - 13x^2 - 25x - 12 = 0$

(7) $x^3 - 4x - 3 = 0$

(8) $x^3 - 4x^2 + 6x - 4 = 0$

(9) $x^3 - 7x^2 + 17x - 15 = 0$

(10) $x^4 - 6x^3 + 12x^2 + 6x - 13 = 0$

(11) $x^3 + 6x^2 + 21x + 26 = 0$

(12) $4x^4 - 8x^3 - 33x^2 + 72x - 27 = 0$

(13) $8x^4 - 4x^3 - 6x^2 + 5x - 1 = 0$

(14) $2x^4 - x^3 + 2x^2 + 19x - 10 = 0$

(15) $x^4 - 2x^3 + 4x - 4 = 0$; Given $1 + i$ is a root

(16) $x^4 + 4x^3 + 5x^2 + 16x + 4 = 0$; Given $2i$ is a root

(17) $x^4 + 2x^3 + 7x^2 + 30x + 50 = 0$; Given $-2 + i$ is a root

(18) Write an integral polynomial having the following sets of roots please

(a) $\left\{ 2, -3, \frac{3}{4} \right\}$

(b) $\left\{ 1 \pm 2i, -2 \pm \sqrt{3} \right\}$

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Answers

(1) $-3\ ,\ 1\ ,\ \frac{1}{2}$

(2) $-2\ ,\ -1\ ,\ -1 \pm \sqrt{5}$

(3) $-2\ ,\ 1\ ,\ 2\ ,\ \frac{-1 \pm \sqrt{3}\,i}{2}$

(4) $\frac{1}{3}\ ,\ 1\ ,\ 1 \pm \sqrt{2}$

(5) $\frac{1}{2}, \frac{1}{2}, \pm \frac{\sqrt{3}}{3}$

(6) $-3\ ,\ -1\ ,\ -1\ ,\ 4$

(7) $-1\ ,\ \frac{1 \pm \sqrt{13}}{2}$

(8) $2\ ,\ 1 \pm i$

(9) $3\ ,\ 2 \pm i$

(10) $\pm 1\ ,\ 3 \pm 2i$

(11) $-2\ ,\ -2 \pm 3i$

(12) $\frac{1}{2}\ ,\ \frac{3}{2}\ ,\ \pm 3$

(13) $-1\ ,\ \frac{1}{2}\ ,\ \frac{1}{2}\ ,\ \frac{1}{2}$

(14) $-2\ ,\ \frac{1}{2}\ ,\ 1 \pm 2i$

(15) $1 \pm i\ ,\ \pm \sqrt{2}$

(16) $\pm 2i\ ,\ -2 \pm \sqrt{3}$

(17) $-2 \pm i\ ,\ 1 \pm 3i$

(18) **(a)** $4x^3 + x^2 - 27x + 18 = 0$

(b) $x^4 + 2x^3 - 2x^2 + 18x + 5 = 0$