

Mr. Ward Answer Key

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1. $(x+1)$; $2x^4 + 2x^3 - x^2 - 5x - 4$

$$\begin{array}{r|rrrrrr} -1 & 2 & 2 & -1 & -5 & -4 \\ & \downarrow & -2 & 0 & 1 & 4 \\ \hline & 2 & 0 & -1 & -4 & 0 \end{array}$$

Yes $(x+1)$ is a factor.

2. $(x-2)$; $5x^3 + x^2 - 7$

$$\begin{array}{r|rrrr} 2 & 5 & 1 & 0 & -7 \\ & \downarrow & 10 & 22 & 44 \\ \hline & 5 & 11 & 22 & 37 \end{array}$$

No $(x-2)$ is not a factor.

3. $(2x-4)$; $2x^5 - 4x^4 + 2x^2 - 2x - 4$

FIRST! $(2x-4)$ divided by 2 $\Rightarrow (x-2)$

Now we can continue

$$\begin{array}{r|rrrrrr} 2 & 2 & -4 & 0 & 2 & -2 & -4 \\ & \downarrow & 4 & 0 & 0 & 4 & 4 \\ \hline & 2 & 0 & 0 & 2 & 2 & 0 \end{array}$$

Yes $(2x-4)$ is a factor.

17. $x-3$; $4x^6 - 12x^5 + 2x^3 - 6x^2 - 5x + 10$

$$\begin{array}{r} 3 \overline{) 4 \quad -12 \quad 0 \quad 2 \quad -6 \quad -5 \quad 10} \\ \underline{ \downarrow } 12 \quad 0 \quad 0 \quad 6 \quad 0 \quad -15} \\ 4 \quad 0 \quad 0 \quad 2 \quad 0 \quad -5 \quad \underline{-5} \end{array}$$

No $(x-3)$ is not a factor.

18. $x-8$; $x^5 - 8x^4 + 8x - 64$

$$\begin{array}{r} 8 \overline{) 1 \quad -8 \quad 0 \quad 0 \quad 8 \quad -64} \\ \underline{ \downarrow } 8 \quad 0 \quad 0 \quad 0 \quad 64} \\ 1 \quad 0 \quad 0 \quad 0 \quad 8 \quad \underline{0} \end{array}$$

Yes $(x-8)$ is a factor.

19. $3x+12$; $3x^4 + 12x^3 + 6x + 24$

FIRST! $(3x+12)$ divided by 3 $\Rightarrow (x+4)$

Now we can continue

$$\begin{array}{r} -4 \overline{) 3 \quad 12 \quad 0 \quad 6 \quad 24} \\ \underline{ \downarrow } -12 \quad 0 \quad 0 \quad -24} \\ 3 \quad 0 \quad 0 \quad 6 \quad \underline{0} \end{array}$$

Yes $(3x+12)$ is a factor.