

$$\begin{array}{r}
 \textcircled{1} \quad -7x^2 + 8 \\
 + \textcircled{3}x^3 - \textcircled{3}x^2 - \textcircled{4} \\
 \hline
 x^3 - 10x^2 + 4
 \end{array}
 \quad \textcircled{B.}$$

$$\begin{array}{r}
 \textcircled{2} \quad 5x^5 - 13x^3 - 14 \\
 + \textcircled{7}x^5 + \textcircled{16}x^3 - \textcircled{4} \\
 \hline
 -2x^5 - 29x^3 - 10
 \end{array}
 \quad \textcircled{B.}$$

$$\begin{array}{r}
 \textcircled{3} \quad 2x^7 - 18x^6 + 14 \\
 + \textcircled{7}x^7 + \textcircled{5}x^6 + \textcircled{3} \\
 \hline
 -5x^7 - 26x^6 + 11
 \end{array}
 \quad \textcircled{C.}$$

$$\begin{array}{r}
 \textcircled{4} \quad 3x^5 + 9x^4 + 6x \\
 + 2x^5 - 6x^4 + 7x \\
 \hline
 10x^5 + 3x^4 + 13x \quad \textcircled{A}
 \end{array}$$

$$\begin{array}{r}
 \textcircled{5} \quad (-2x-12)(-2x-10) \\
 \hline
 4x + 20x \\
 + 24x + 120 \\
 \hline
 4x + 44x + 120 \quad \textcircled{A}
 \end{array}$$

$$\begin{array}{r}
 \textcircled{6} \quad (x+7y)(x-11y) \quad \textcircled{B} \\
 \hline
 x^2 - 11xy \\
 + 7xy - 77y^2 \\
 \hline
 x^2 - 4xy - 77y^2
 \end{array}$$

$$7) (x-7y)(4x-8y) \text{ (D)}$$

$$4x^2 - 8xy$$

$$- 28xy + 56y^2$$


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$$4x^2 - 36xy + 56y^2$$

$$8) (-2x+10y)(5x+6y)$$

$$-10x^2 - 12xy$$

$$+ 50xy + 60y^2$$


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$$-10x^2 + 38xy + 60y^2$$

$$9) (9y+x)(7y-x) \text{ (A)}$$

$$81y^2 - 9xy$$

$$+ 7xy - x^2$$


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$$81y^2 - x^2$$

$$10. (8x-5)(8x^2+5)^2$$

$$-64x^2 - 80x - 25 \quad \text{(B)}$$

$$8x \cdot -5 = -40 \cdot 2 = -80$$

$$(11) (b-2)^2 = (b^2) - 2^2$$

$$b^2 - 2b \cdot 2 - 2^2 \quad \text{(A)}$$

$$b \cdot -2 = -b \cdot 2 = -2b$$

$$(2) (8x+3y)^2 = (8x)^2 + (3y)^2$$

$$64x^2 + 48xy + 9y^2 \quad \text{(B)}$$

$$8x \cdot 3y = 24xy \cdot 2 = 48xy$$

$$\textcircled{13.} \quad 6x \sqrt{18x^7 - 30x^7} \\ - 18x^7$$

$\textcircled{0.}$

$$\begin{array}{r} -30x^7 \\ -70x^7 \\ \hline 0 \end{array}$$

$$\textcircled{14.} \quad 5x \sqrt{35x^2 + 10x - 11} \\ - 35x$$

$\textcircled{D.}$

$$\begin{array}{r} +10x \\ -10x \\ \hline \end{array}$$

$$R = \boxed{-11}$$

$$(15) \quad 9 - x^2 \\ (3-x)(3+x)$$

$$\begin{array}{r} 9 + 3x \\ \cancel{3x} - x^2 \end{array} \quad (10)$$

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$$9 - x^2$$

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$$(16) \quad x^3 - 512 \quad (11)$$

$$(x-8)(x^2+8x+64)$$

$$\begin{array}{r} x^3 + 8x^2 + 64x \\ \cancel{-8x^2} \quad \cancel{-64x} - 512 \end{array}$$

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$$x^3 - 512$$

$$(17) X^3 + 729 \quad (D)$$

$$(X+9)(X^2 - 9X + 81)$$

$$\begin{array}{r} X^3 - 9X + 81X \\ + 9X - 81X + 729 \\ \hline X^3 + 729 \end{array}$$

$$X^3 + 729$$

$$(18) X^2 + 3X - 10 \quad \begin{array}{l} (+5) \\ (-2) \\ \hline -10 \end{array}$$

$$5 + (-2) = 3$$

$$(X+5)(X-2) \quad (C)$$

19.  $x^2 + 36 =$  10. prime

$6x \cdot 2 = 12x$

$x + 6$   
 $x^2 + 12x + 36$  = wrong

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$(x - 6)^2 = x^2 - 12x + 36$

$x^2 - 12x + 36$  wrong

$(x + 6)(x - 6)$  wrong

$x^2 - 6x + 6x - 36 = x^2 - 36$

$$\textcircled{20} \quad 7x^2 - 7x - 42$$

$$\begin{array}{r} 7x^2 \quad | \quad -3+2x \quad | \quad -6 \cdot 7 \\ \quad \quad \downarrow \quad \quad \downarrow \\ \quad \quad -1x \cdot 7 \quad \quad \downarrow \\ \quad \quad -7x \quad (-3 \cdot 2) \cdot 7 \\ \quad \quad \quad \quad \quad -42 \end{array}$$

$$7(x-3)(x+2)$$

$\textcircled{B}$

$$\boxed{21.} \quad 5x^2 - 35x + 60$$

$$\begin{array}{r} \swarrow \\ 5(x^2 - 7x + 12) \\ \begin{array}{r} \hline -4 \quad -3 \quad 1 \\ \hline -4 \quad -3 \\ \hline -7 \quad 12 \end{array} \end{array}$$

$$5(x-4)(x-3)$$

A.

(22)  $15x^2 - 65 - 50$

no no

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$5(x^2 - 13 - 10)$  *Not divisible*

~~$5(10-1)$~~

~~$5(5-2)$~~

Prime (D)

$$\textcircled{23} 6x^2 - 21x - 12$$

$$3(2x^2 - 7x - 2)$$

Prime  $\textcircled{D}$

Only way to  
simplify

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no way to  
break this  
down further

24.

$$\begin{array}{r}
 x^5 + 5x^4 + 8x^3 + 13x^2 - 8x + 13 \\
 \underline{-5x^5} \phantom{+ 10x^4} \phantom{+ 20x^3} \phantom{+ 25x^2} \phantom{- 40x} \phantom{+ 65} \\
 10x^4 + 8x^3 + 13x^2 - 8x + 13 \\
 \underline{-10x^4 + 50x^3} \phantom{+ 100x^2} \phantom{- 160x} \phantom{+ 215} \\
 42x^3 + 13x^2 - 8x + 13 \\
 \underline{-42x^3 + 168x^2} \phantom{- 112x} \phantom{+ 159} \\
 180x^2 - 8x + 13 \\
 \underline{-180x^2 + 720x} \phantom{+ 1170} \\
 712x - 13 \\
 \underline{-712x + 2848} \\
 2835
 \end{array}$$

$$x^4 + 3x^3 - 2x^2 + 2x + 2$$

R3

A

25.  $X^4 \div X-3$

$X-3 \overline{) X^4 + 0X^3 + 0X^2 + 0X + 4}$

3  $\left| \begin{array}{cccc|c} 1 & 0 & 0 & 0 & 4 \\ \hline 3 & 9 & 27 & 81 & \end{array} \right.$

$\begin{array}{cccc|c} 1 & 3 & 9 & 27 & 77 \\ \hline \end{array}$

$X^3 + 3X^2 + 9X + 27$

(A)

(R7)