

F.4 Mathematics

MC Exercise

4A5 More About Polynomials

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|--|---|
| <p>1. When $x^3 - x^2 + x - 4$ is divided by $x + 1$, the quotient is</p> <p>A. -7.</p> <p>B. $x^2 + 1$.</p> <p>C. $x^2 - 2x + 3$.</p> <p>D. $x^2 - 2x - 1$.</p> | <p>5. Let a, b and c be constants. When $4x^3 + ax^2 + bx + 12$ is divided by $2x + c$, the quotient is $2x^2 - 3x - 1$ and the remainder is 7. Find the values of a, b and c.</p> <p>A. $a = -16$, $b = 13$, $c = -5$</p> <p>B. $a = -16$, $b = 13$, $c = 5$</p> <p>C. $a = 4$, $b = -17$, $c = -5$</p> <p>D. $a = 4$, $b = -17$, $c = 5$</p> |
| <p>2. When $x^3 + x^2 + x$ is divided by $2x - 3$, the quotient is</p> <p>A. $\frac{1}{2}x^2 - \frac{5}{4}x$.</p> <p>B. $\frac{1}{2}x^2 + \frac{5}{4}x$.</p> <p>C. $\frac{1}{2}x^2 - \frac{5}{4}x + \frac{19}{8}$.</p> <p>D. $\frac{1}{2}x^2 + \frac{5}{4}x + \frac{19}{8}$.</p> | <p>6. When $x^3 + x - 1$ is divided by x, the remainder is</p> <p>A. -3.</p> <p>B. -1.</p> <p>C. 1.</p> <p>D. 3.</p> |
| <p>3. When $x^4 + 4x^3 - x^2 + 2x + 1$ is divided by $1 + 2x + x^2$, the remainder is</p> <p>A. $-6x^2$.</p> <p>B. $x^2 + 2x - 6$.</p> <p>C. $12x + 7$.</p> <p>D. $12x^2 + 7x$.</p> | <p>7. When $x^{531} - 1$ is divided by $x + 1$, the remainder is</p> <p>A. -2.</p> <p>B. -1.</p> <p>C. 0.</p> <p>D. 2.</p> |
| <p>4. Let p and q be constants. When $3x^3 + 7x^2 + px + q$ is divided by $3x^2 + x + 2$, the quotient is $x + 2$ and the remainder is $-x - 3$. Find the values of p and q.</p> <p>A. $p = 1$, $q = 2$</p> <p>B. $p = 3$, $q = 1$</p> <p>C. $p = 4$, $q = 4$</p> <p>D. $p = -1$, $q = -3$</p> | <p>8. Let m be a constant. When $x^3 + 2mx^2 - mx - 2$ is divided by $x - 2$, the remainder is -12. Find the value of m.</p> <p>A. -3</p> <p>B. $-\frac{9}{5}$</p> <p>C. $-\frac{1}{5}$</p> <p>D. 3</p> |

9. Let a and b be constants. If $f(x) = \frac{2}{3}x^2 + ax - b$ is divided by $x - 3$, the remainder is 4, then $2b - 6a + 9 =$
- A. -3 .
B. 5 .
C. 7 .
D. 13 .
10. When a polynomial $f(x)$ is divided by $2x - 3$, the remainder is r . Find the remainder when $f(x)$ is divided by $9 - 6x$.
- A. $-\frac{3}{2}r$
B. $\frac{3}{2}r$
C. $-r$
D. r
11. Which of the following is divisible by $x + 1$?
- A. $x^3 - 2x^2 + 3x + 4$
B. $x^3 - 2x^2 - 3x + 4$
C. $-x^3 - 2x^2 + 3x + 4$
D. $-x^3 - 2x^2 - 3x + 4$
12. If $f(x) = x^3 - 3x^2 - 4x + 12$ and $f(-2) = 0$, factorize $f(x)$.
- A. $(x + 1)(x + 2)(x + 6)$
B. $(x - 1)(x + 2)(x - 6)$
C. $(x + 2)^2(x + 3)$
D. $(x + 2)(x - 2)(x - 3)$
13. Let k be a constant. If $f(x) = x^{100} - 100x + k$ is divisible by $x + 1$, find the remainder when $f(x)$ is divided by $x - 1$.
- A. -200
B. -198
C. 0
D. 2
14. Let a and b be constants. If $x - 3$ is a factor of $x^3 + ax^2 + bx - 3$, find the remainder when $2x^3 + (3a + b)x^2 - x + 2$ is divided by $x + 1$.
- A. -8
B. -7
C. 8
D. 9
15. Let $f(x) = x^3 + kx^2 - 19x - 20$, where k is a constant. It is given that $f(x) \equiv Q(x)(x + 1)$. Find $Q(x)$.
- A. $x^2 + x - 20$
B. $x^2 + 8x - 20$
C. $x^2 + 9x + 20$
D. $x^2 + 12x + 20$
16. Factorize $x^3 - 13x^2 + 144$.
- A. $(x - 3)(x + 4)(x + 12)$
B. $(x - 3)(x - 4)(x + 12)$
C. $(x + 3)(x + 4)(x - 12)$
D. $(x + 3)(x - 4)(x - 12)$
17. Factorize $9x^3 - 6x^2 + 6x - 4$.
- A. $(x - 1)(3x + 2)^2$
B. $(x - 1)(3x - 2)^2$
C. $(3x - 2)(3x^2 + 2)$
D. $(3x + 2)(3x^2 - 2)$
18. Solve the equation $x^3 + 7x^2 + 7x - 15 = 0$.
- A. $x = -5, -3$ or 1
B. $x = -5, -1$ or 3
C. $x = -3, -1$ or 5
D. $x = 1, 3$ or 5

19. If $x-a$ is a factor of $f(x)$, which of the following must be a factor of $f(3x)$?
- $x+3a$
 - $x-3a$
 - $3x+a$
 - $3x-a$
20. Find the H.C.F. of x^2+x-20 and x^3+125 .
- $x-4$
 - $x+5$
 - $x+2$
 - $(x-4)(x+2)(x+5)$
21. Find the L.C.M. of x^2+4x-5 and x^3-1 .
- $x-1$
 - $(x-1)(x^2+x+1)$
 - $(x-1)(x+5)(x^2+x+1)$
 - $(x-1)^2(x+5)(x^2+x+1)$
22. Find the H.C.F. and L.C.M. of $(x-1)(x+2)^2(x-3)$ and $(x-1)(x-2)(x-3)$.
- H.C.F. $= (x-1)(x-2)(x-3)(x+2)^2$,
L.C.M. $= (x-1)(x-3)$
 - H.C.F. $= (x-1)(x-3)$,
L.C.M. $= (x-1)(x-2)(x-3)(x+2)^2$
 - H.C.F. $= (x-1)(x-2)(x-3)$,
L.C.M. $= (x-1)(x+2)^2(x-3)$
 - H.C.F. $= (x-1)(x+2)^2(x-3)$,
L.C.M. $= (x-1)(x-2)(x-3)$
23. Find the H.C.F. and L.C.M. of $x(x+1)$ and $x(x^2-1)$.
- H.C.F. $= x$, L.C.M. $= x(x+1)(x^2-1)$
 - H.C.F. $= x(x+1)(x^2-1)$, L.C.M. $= x$
 - H.C.F. $= x(x+1)$,
L.C.M. $= x(x-1)(x+1)$
 - H.C.F. $= x(x-1)(x+1)$,
L.C.M. $= x(x+1)$
24. Find the H.C.F. and L.C.M. of $3x^2+3xy-6y^2$, $3x^2-3xy-18y^2$ and $6x^2+24xy+24y^2$.
- H.C.F. $= 3(x+2y)$,
L.C.M. $= 6(x+2y)^2(x-y)(x-3y)$
 - H.C.F. $= 6(x+2y)^2(x-y)(x-3y)$,
L.C.M. $= 3(x+2y)$
 - H.C.F. $= 54(x+2y)^2(x-y)(x-3y)$,
L.C.M. $= x+2y$
 - H.C.F. $= x+2y$,
L.C.M. $= 54(x+2y)^2(x-y)(x-3y)$
25. Simplify $\frac{x^2-6x-27}{x^2+8x+15}$.
- $-\frac{33}{23}$
 - $x+3$
 - $\frac{x+9}{x+5}$
 - $\frac{x-9}{x+5}$
26. Simplify $\frac{1}{x-1} + \frac{1}{(x-1)(x-2)}$.
- $x-1$
 - $\frac{1}{x-1}$
 - $\frac{1}{x-2}$
 - $\frac{1}{(x-1)(x-2)}$
27. Simplify $\frac{-3x-1}{x^2+5x+6} + \frac{x-3}{x+2}$.
- 1
 - $\frac{x-5}{x-2}$
 - $\frac{x-2}{x+3}$
 - $\frac{x-5}{x+3}$

28. Simplify

$$\left(\frac{1}{2a} + \frac{1}{3b}\right) \div \frac{3}{3b^2 + ab - 2a^2} \times \frac{15ab}{9b^2 - 4a^2}.$$

- A. $\frac{5(b+a)}{6}$
- B. $\frac{5(b-a)}{6}$
- C. $\frac{5(b+a)}{3(3b+2a)}$
- D. $\frac{5(b-a)}{3(3b+2a)}$

29. Let P and Q be constants. If

$$\frac{9x+3}{(x+7)(x-8)} \equiv \frac{P}{x+7} + \frac{Q}{x-8}, \quad \text{find the}$$

values of P and Q .

- A. $P=9, Q=3$
- B. $P=3, Q=9$
- C. $P=4, Q=5$
- D. $P=5, Q=4$



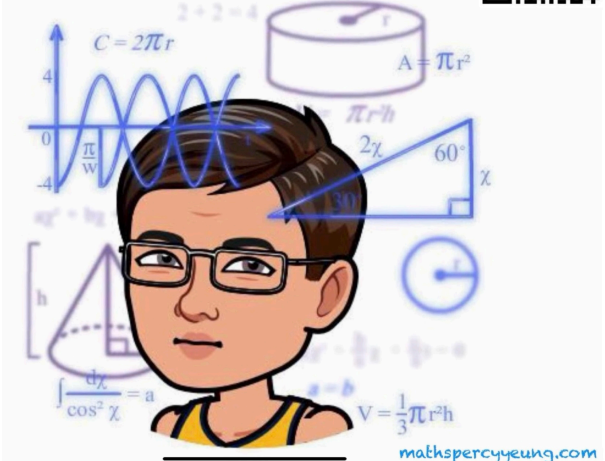




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