

1. Which one of the following is an irrational number?

(a)  $\pi \div \frac{22}{7}$

(b)  $(0.\overline{23})^2$

(c)  $(\sqrt{2})(\sqrt{8})$

(d) 0.73

(e)  $\sqrt{25}$

See Example 1 Page 4  
& Problems 1, 2 page 15

2. If  $x < -1$ , then the expression  $|2x| + |-4x| + ||6x||$  is equal to

(a)  $-12x$

(b)  $12x$

(c)  $-4x$

(d)  $8x$

(e)  $4x$

See Problems 37 to 40 p. 16

3. The expression  $8 - 5[3x - 4(2x - 3)]$  is equal to

(a)  $-52 + 25x$

(b)  $68 + 25x$

(c)  $-52 - 55x$

(d)  $20 - 23x$

(e)  $8 - 35x$

See example 9 p.13

Problems 105 and 106 p.17

4. The expression  $\frac{2^{5/2} x^{5/6} y^{1/5}}{4x^{1/3} y^{7/10}}$  is equal to

(a)  $\sqrt{\frac{2x}{y}}$

(b)  $\sqrt{\frac{2y}{x}}$

(c)  $\sqrt{\frac{y}{2x}}$

(d)  $\sqrt{\frac{x}{2y}}$

(e)  $\sqrt{2xy}$

See problems 59 to 70 p.32

5. Let  $x$  be a real number, and let  $A = \{x|x \leq -1\} \cup \{x|x \geq 2\}$ ,  
 $B = \{x|-1 \leq x \leq 3\} \cap \{x|1 < x < 5\}$ . Then the set  
 $A \cap B$  is equal to [Hint: Graph A and B]

(a)  $[2, 3]$

(b)  $[-1, 2] \cup [3, 5]$

(c)  $[-1, 5]$

(d)  $[-1, 1) \cup [3, 5)$

(e)  $\phi$  (the empty set)

See examples 5 and 6 p. 9

Problems 19 to 30 p. 6

6. The **imaginary part** of the complex number  $\frac{5+3i}{4-2i}$  is  
 equal to

(a)  $\frac{11}{10}$

(b)  $-\frac{3}{2}$

(c)  $\frac{7}{10}$

(d)  $-\frac{3}{2}i$

(e)  $-\frac{7}{5}i$

see example 4 p. 70

Problems 41 to 50 p. 72

7. The **sum** of the coefficients of  $y^2$  and  $y^3$  in the product  $(5y^3 - 3y + 4)(3y^2 - 4y + 7)$  is equal to

(a) 50

(b) 47

(c) 27

(d) -3

(e) 14

See problems 33 and 34 p. 41

8. One of the factors of  $4x^3 + 4x^2y - 9xy^2 - 9y^3$  is equal to

(a)  $2x - 3y$

(b)  $x - y$

(c)  $x - 3y$

(d)  $2x + y$

(e)  $2x - y$

see problems 63 to 68 p. 54

9. The complex number  $(3+2\sqrt{-32})(2-3\sqrt{-8})$  in standard form is equal to

(a)  $102 - (2\sqrt{2})i$

See example 3 p. 69

(b)  $-90 - (2\sqrt{2})i$

Problems 33 to 36 p. 72

(c)  $-18 - (2\sqrt{2})i$

(d)  $6 + 48i$

(e)  $6 + 16i$

10. The expression  $\frac{x^{-2} - y^{-2}}{x^{-1} - y^{-1}}$  simplifies to

(a)  $\frac{x+y}{xy}$

See example 5 p. 61

See problems 59 to 62 p. 64

(b)  $\frac{x-y}{xy}$

(c)  $\frac{1}{x-y}$

(d)  $\frac{y^3 - x^3}{x^3y^3}$

(e)  $xy(y-x)$

11.  $\frac{5}{x^2 + x} - \frac{10}{x^2 - 1} =$

See example 3 p. 59

See Problems 23 to 32 A.63

(a)  $\frac{-5}{x(x-1)}$

(b)  $\frac{-5}{(x-1)(x+1)}$

(c)  $\frac{-6}{x(x+1)}$

(d)  $\frac{-7}{x(x-1)(x+1)}$

(e)  $\frac{4}{x(x-1)(x+1)}$

12.  $\frac{6x^2}{3x-6} - \frac{4x^2 + 4x + 1}{x-2} \div \frac{2x+1}{x-3} =$

See Problems 33 to 36 A.63

(a)  $\frac{5x+3}{x-2}$

(b)  $\frac{5x-2}{x-3}$

(c)  $\frac{2x+1}{x-2}$

(d)  $\frac{3x+5}{(x-2)(2x+1)}$

(e)  $\frac{3x+5}{x-2}$

13. One of the factors of  $36x^3(9x^3 + 8)^3 - (9x^3 + 8)^4$  is equal to

(a)  $9x^2 + 6x + 4$

(b)  $9x^2 - 36x + 16$

(c)  $3x^2 - 6x + 2$

(d)  $27x^2 - 12x + 16$

(e)  $9x^2 + 36x + 16$

See problems 85 and 86 p. 54

14.  $\sqrt[4]{32} - \frac{2}{\sqrt[4]{8}} =$

(a)  $\sqrt[4]{2}$

(b)  $2\sqrt[4]{8}$

(c)  $2\sqrt[4]{2}$

(d)  $3\sqrt[4]{8}$

(e)  $3\sqrt[4]{2}$

See problems 99 to 106 p. 33

15. The number  $\frac{(0.93 \times 10^8)(5.2 \times 10^{-7})}{(2.6 \times 10^{-10})(3 \times 10^{15})}$ , written in scientific notation, is

(a)  $6.2 \times 10^{-5}$

(b)  $0.62 \times 10^{-3}$

(c)  $6.2 \times 10^{-4}$

(d)  $62 \times 10^{-5}$

(e)  $1.3 \times 10^{-4}$

See problems 41 to 48 p.32