

Multiple-Choice

$$q = \frac{d}{d+n}$$

- On a manufacturer's assembly line, d parts are found to be defective and n parts are nondefective. The formula above is used to calculate a quality-of-parts ratio. What is d expressed in terms of the other two variables?
 - $\frac{n}{1-q}$
 - $\frac{nq}{1-q}$
 - $\frac{n}{q-1}$
 - $\frac{nq}{q-1}$
- The sum of $\frac{a}{a^2-b^2}$ and $\frac{b}{a^2-b^2}$ is
 - $\frac{1}{a-b}$
 - $\frac{a}{a-b}$
 - $\frac{b}{a-b}$
 - $\frac{a+b}{a-b}$
- If $ax + x^2 = y^2 - ay$, what is a in terms of x and y ?
 - $y - x$
 - $x - y$
 - $x + y$
 - $\frac{x^2 + y^2}{x - y}$
- If $\frac{xy}{x+y} = 1$ and $x \neq -y$, what is x in terms of y ?
 - $\frac{y+1}{y-1}$
 - $\frac{y+1}{y}$
 - $\frac{y}{y-1}$
 - $\frac{y}{y+1}$
- What is the sum of $\frac{4x}{x-1}$ and $\frac{4x+4}{x^2-1}$, expressed in simplest form?

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

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

(C) $\frac{4(x^2+4x+1)}{x^2-1}$

(D) $\frac{4(x+2)}{x^2-1}$

6. If $h = \frac{x^2-1}{x+1} + \frac{x^2-1}{x-1}$, what is x in terms of h ?

(A) $\frac{h}{2}$

(B) $2h+1$

(C) $2h-1$

(D) $\sqrt{\frac{h}{2}}$

7. If $ax^2 - bx = ay^2 + by$, then $\frac{a}{b} =$

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

(B) $\frac{1}{x+y}$

(C) $\frac{x-y}{x+y}$

(D) $\frac{x+y}{x-y}$

8. If $a \neq b$ and $\frac{a^2-b^2}{9} = a+b$, then what is the value of $a-b$?

(A) $\frac{1}{2}$

(B) 3

(C) 9

(D) 12

9. If $\frac{r+s}{x-y} = \frac{3}{4}$, then $\frac{8r+8s}{15x-15y} =$

(A) $\frac{32}{45}$

(B) $\frac{8}{15}$

(C) $\frac{7}{16}$

(D) $\frac{2}{5}$

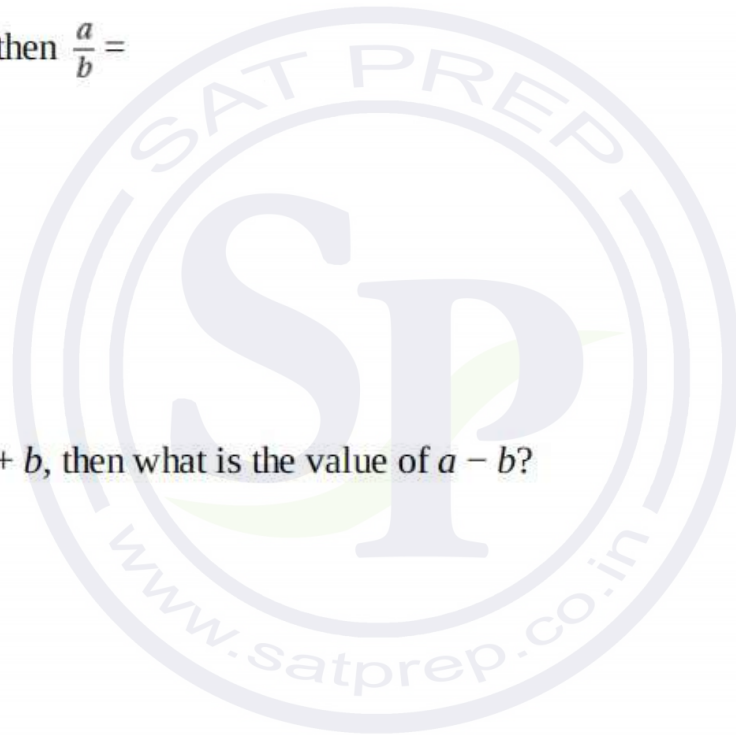
10. If $x^2 = k+1$, then $\frac{x^4-1}{x^2+1} =$

(A) k

(B) k^2

(C) $k+2$

(D) $k-2$



11. If $p = x(3x + 5) - 28$, then p is divisible by which of the following expressions?
- (A) $3x + 4$
 - (B) $x - 4$
 - (C) $x + 7$
 - (D) $3x - 7$
12. If $(x + p)$ is a factor of both $x^2 + 16x + 64$ and $4x^2 + 37x + k$, where p and k are nonzero integer constants, what could be the value of k ?
- (A) 9
 - (B) 24
 - (C) 40
 - (D) 63

