

-dam Champagne

1) $3x - 12$

$x^2 + 2x - 24$

$3x - 12 \quad x^2 + 2x - 24$

$3(x - 4) \quad (x + 6)(x - 4)$

~~$3(x - 4)$
 $(x + 6)(x - 4)$~~

$\frac{3}{x + 6}$

3) $\frac{1}{x^2 - xh} - \frac{3}{x}$

$\frac{1}{x^2 - xh} - \frac{3(x - xh)}{x(x - xh)}$

$\frac{1}{x^2 - xh} - \frac{3x - 3xh}{x - xh} \quad \frac{1 - 3x - 3xh}{x^2 - xh}$

4) $\frac{1}{3+x} = \frac{1}{3} \rightarrow \left(\frac{3}{3}\right) \frac{1}{3+x} - \frac{1}{3} \left(\frac{3+x}{3+x}\right)$

$\frac{3}{9+3x} - \frac{3+x}{9+3x} = \frac{-x}{9+3x} \left(\frac{1}{x}\right) = \boxed{\frac{-1}{3(x+3)}}$

$$5) \frac{5-x}{x^2-25} = \frac{\cancel{(x-5)}}{\cancel{(x-5)}(x+5)} = \boxed{\frac{-1}{x+5}}$$

$$6) \frac{12x^{-3}y^2}{18xy^{-1}} = \frac{12y^2x^{-1}}{18x^3x} = \boxed{\frac{2y^3}{3x^4}}$$

$$7) \frac{\frac{2}{x^2}}{\frac{10}{x^3}} = \frac{1}{5} \cdot \frac{x}{x} = \boxed{\frac{x}{5}}$$

$$8) \frac{15x^2}{5\sqrt{x}} = \frac{3x^2}{\sqrt{x}} \left(\frac{\sqrt{x}}{\sqrt{x}} \right) = \frac{3x\sqrt{x}}{x} = \boxed{3\sqrt{x}}$$

$$9) 3xz - 7ay + 8ay - 5axz = 0$$

$$3xz + ay - 5axz = 0$$

$$3xz - 5axz = -ay$$

$$z(3x - 5ax) = -ay$$

$$z = \frac{-ay}{3x - 5ax}$$

$$10) \frac{f(x+h) - f(x)}{h}$$

$$\text{if } f(x) = 2x - 3x^2$$

$$\frac{2(x+h) - 3(x+h)^2 - 2x + 3x^2}{h}$$

$$\frac{\cancel{2x} + 2h - \cancel{3x^2} - 6xh - 3h^2 - \cancel{2x} + \cancel{3x^2}}{h}$$

$$\frac{2h - 6xh - 3h^2}{h}$$

$$\lim_{h \rightarrow 0} 2 - 6x - 3h$$

$$2 - 6x$$

$$12) A. \ln e = 1$$

$$B. e \cdot x$$

$$D. 27a^{1/9}$$

$$E. \text{undefined}$$

$$F. 3$$

$$13) y - 2 = -1(x - 1)$$

$$14) x + 2y - 7 = 9$$

$$15) (2, -2), (-1, -5)$$

$$16) \frac{\sqrt{x-1}}{1} - \frac{5}{\sqrt{x-1}} = 0$$

$$\left(\frac{\sqrt{x-1}}{\sqrt{x-1}} \right) \frac{\sqrt{x-1}}{1} - \frac{5}{\sqrt{x-1}} = 0$$

$$\frac{x-1}{\sqrt{x-1}} - \frac{5}{\sqrt{x-1}} = 0$$

$$\frac{x-6}{\sqrt{x-1}} = 0$$

$$x-6 = 0$$

$$\boxed{x=6}$$

$$A. \frac{1}{2}$$

$$B. -\frac{1}{2}$$

$$C. -\sqrt{3}$$

$$F. \frac{1}{\sqrt{3}}$$

$$18) \sin x (2 \cos x + 1) = 0$$

$$\sin x = 0$$

$$2 \cos x = -\frac{1}{2}$$

$$\boxed{x = 0, \pi, \frac{2\pi}{3}, \frac{4\pi}{3}}$$