

ANSWERS

1a

1b

2a

2b

3a

3b

4a

4b

5a

5b

6a

6b

Simplify the following expressions.

1. a. $\frac{2a+2b}{b} \times \left(\frac{1}{a-b} - \frac{1}{a+b} \right)$

b. $\frac{x^{0.5}}{x^{0.5}-5} - \frac{5}{x^{0.5}+5} + \frac{x}{25-x}$

2. a. $\frac{4m+4n}{m^2+4m-n^2-4n} \times \frac{16-m^2-2mn-n^2}{m^2+mn}$

b. $\frac{m^2+mn}{n^2-5n+5m-m^2} \times \frac{m^2-10m^2+25-n^2}{m^2-n^2}$

3. a. $\frac{3x}{2y-2x} + \frac{3y}{x+y} + \frac{3y(3y-x)}{2x^2-2y^2}$

b. $\left(\frac{1}{x^2+2xy+y^2} - \frac{1}{x^2-2xy+y^2} \right) \times \frac{x^4-2x^2y^2+y^4}{xy}$

4. a. $\frac{6}{4c-c^2} - \frac{2}{c^2+4c} - \frac{c}{c^2-16}$

b. $\frac{x+2}{2x-4} + \frac{2-x}{6+3x} + \frac{5x^3+8}{24-6x^2}$

5. a. $\frac{3a^2-b^2}{a^3-b^3} - \frac{a+b}{a^2+ab+b^2}$

b. $\left(\frac{a^2+b^2}{2ab} - 1 \right) : \frac{a-b}{ab}$

6. a. $\frac{a^2-b^2}{a-b} - \frac{a^3-b^3}{a^2-b^2}$

b. $\frac{x}{x^2+y^2} - \frac{y(x-y)^2}{x^4-y^4}$

B

ANSWERS

7a

7b

8a

8b

9a

9b

10a

10b

11a

11b

12a

12b

$$7. \text{ a. } \left(\frac{y}{x} - 2 + \frac{x}{y} \right) \times \frac{x^2}{x^2 - y^2}$$

$$\text{ b. } \left(\frac{25}{a^3 - 25a} + \frac{1}{a + 5} \right) \times \left(\frac{a - 5}{a^2 - 5a} + \frac{a}{25 - 5a} \right)$$

$$8. \text{ a. } \frac{x^{\frac{1}{2}} + 1}{x + x^{\frac{1}{2}} + 1} : \frac{1}{x^{1.5} - 1}$$

$$\text{ b. } \left(a^{\frac{1}{2}} + b^{\frac{1}{2}} \right)^2 + \left(a^{\frac{1}{2}} - b^{\frac{1}{2}} \right)^2$$

$$9. \text{ a. } \frac{8a - 3}{a + 5} - \frac{81 - 27a}{a^2 + 2a - 15}$$

$$\text{ b. } \frac{2m^2 - 18}{m} \times \frac{2m}{m - 3} + \frac{36}{m - 3}$$

$$10. \text{ a. } \left(a + 1 + \frac{1}{a - 1} \right) : \frac{a^2}{1 - 2a + a^2}$$

$$\text{ b. } \left(y + 2 + \frac{8}{y - 2} \right) : \left(\frac{y^2 + 4}{4 - 4y + y^2} \right)$$

$$11. \text{ a. } \left(\frac{3x + 1}{x - 1} + x \right) \times \frac{1}{x + 1}$$

$$\text{ b. } \left(y + \frac{4y + 1}{y - 2} \right) \times \frac{1}{y + 1}$$

$$12. \text{ a. } \left(a - \frac{4a - 9}{a - 2} \right) : \left(2a - \frac{2a}{a - 2} \right)$$

$$\text{ b. } \left(3b - \frac{3b}{b - 4} \right) : \left(b - \frac{6b - 25}{b - 4} \right)$$

B