سلسلة داعمة حول الاشتقاق

مشتقة الدوال الجذرية

احسب $f'(x)$ في الحالات التالية:

1. $f(x) = x + \frac{1}{x}$
2. $f(x) = x + 1 - \frac{1}{x-2}$
3. $f(x) = x + \frac{1}{x} + \frac{1}{x^2}$
4. $f(x) = \frac{x-1}{x+1} + \frac{x+1}{x-1}$
5. $f(x) = \frac{1}{x+1}$
6. $f(x) = \frac{x-3}{x-2}$
7. $f(x) = \frac{1}{x} + 3$
8. $f(x) = \frac{x^2}{2} + \frac{1}{x}$
9. $f(x) = \frac{ax+b}{cx+d}$ حيث: $a, b, c, d \in \mathbb{R}$
10. $f(x) = \frac{2}{x}$
11. $f(x) = \frac{3-x}{x}$
12. $f(x) = \frac{x}{2x-1}$
13. $f(x) = \frac{x-1}{x-2}$
14. $f(x) = \frac{2x+1}{x-3}$
15. $f(x) = \frac{1}{2x^2+x-3}$
16. $f(x) = \frac{x^2+2x-1}{x-1}$
17. $f(x) = \frac{4x^2-x+3}{x^2+1}$
18. $f(x) = \frac{x^2+2x-1}{3x^2-x+2}$
19. $f(x) = \frac{1}{(x^2+3x-1)^3}$
20. $f(x) = \frac{x(2x^2+3)}{(x-1)^2}$

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الحلول:

1. $f'(x) = 1 - \frac{1}{x^2}$
2. $f'(x) = 1 + \frac{1}{(x-2)^2}$
3. $f'(x) = 1 - \frac{1}{x^2} - \frac{2}{x^3}$
4. $f'(x) = -\frac{8x}{(x^2-1)^2}$
5. $f'(x) = -\frac{1}{(x+1)^2}$
6. $f'(x) = \frac{1}{(x-2)^2}$
7. $f'(x) = -\frac{1}{x^2}$
8. $f'(x) = x - \frac{1}{x^2}$
9. $f'(x) = \frac{ad-bc}{(cx+d)^2}$
10. $f'(x) = -\frac{2}{x^2}$
11. $f'(x) = -\frac{3}{x^2}$
12. $f'(x) = -\frac{1}{(2x-1)^2}$
13. $f'(x) = -\frac{1}{(x-2)^2}$
14. $f'(x) = -\frac{7}{(x-3)^2}$
15. $f'(x) = -\frac{4x+1}{(2x^2+x-3)^2}$
16. $f'(x) = \frac{x^2-2x-1}{(x-1)^2}$
17. $f'(x) = \frac{x^2+2x-1}{(x^2+1)^2}$
18. $f'(x) = -\frac{7x^2-10x-3}{(3x^2-x+2)^2}$
19. $f'(x) = -\frac{6x+9}{(x^2+3x-1)^4}$
20. $f'(x) = \frac{2x^3-6x^2-3x-3}{(x-1)^3}$