In each problem, find a formula for $\frac{dy}{dx}$. Do not use the chain rule.

1. $y = 3x + 8$
2. $y = 100$
3. $y = x^{-30}$
4. $y = x^{4.2}$
5. $y = x^{-5/6}$
6. $y = -\frac{1}{x^{2.1}}$
7. $y = \frac{1}{\sqrt{x}}$
8. $y = x^{\pi}$
9. $y = 4x^{3/2} - 5x^{1/2} - x + 10$
10. $y = x^3 + \frac{1}{3x}$
11. $y = 3x^2 + \frac{12}{\sqrt{x}} - \frac{1}{x^7}$
12. $y = \frac{3}{x^2} + \frac{4}{x^3}$
13. $y = 7x^2 + 7^x + 15x^4$
14. $y = 5^x$
15. $y = (0.5)^x + 200$
16. $y = \pi^2$
17. $y = 5^x + \left(\frac{1}{5}\right)^x$
18. $y = 30e^x$
19. $y = 10\cos(x)$
20. $y = 3\sin(x) + 6$
21. $y = \tan(x) + \sin(x)$
22. $y = x^2 - \cos(x)$
23. $y = \sin(x) + 2\cos(x) + 2^x$
24. $y = \frac{1}{4}\tan(x)$

In each problem, use the chain rule to find a formula for $\frac{dy}{dx}$. Be sure to note your choice of u.

25. $y = \cos(6x)$
26. $y = \cos(x^2)$
27. $y = (\cos x)^8$
28. $y = (\sin x + \cos x)^{10}$
29. $y = 2\tan(4^x)$
30. $y = 7^{x^2-5x}$
31. $y = \cos(\sin(x))$
32. $y = (4x - 3)^{100}$
33. $y = 3 \cdot 8^{\sin x}$
34. $y = 10\tan\left(\frac{1}{x}\right)$
35. $y = \cos\left(\sqrt{x} - 5\right)$
36. $y = \sqrt{x - 5}$
37. $y = \cos\left(\sqrt{x - 5}\right)$
38. $y = 4^{\sqrt{x-5}}$
39. $y = 60\cos(3x)$
40. $y = \sin(6x^5)$