11. $y = \dfrac{1}{\sqrt{3x - 2}}$.

12. $y = \dfrac{7}{\sqrt{5 - 2x^2}}$.

13. $y = \sqrt{(x^2 + 4)}$.

14. $y = \sqrt{(x + 1)}$.

15. $y = \dfrac{7}{\sqrt[3]{x^2 + 1}}$.

16. $y = \dfrac{5}{(x^2 - 1)^2}$.

17. $y = \dfrac{2}{(x^2 + 4)^2}$.

18. $y = \dfrac{3}{(5 - x^3)^2}$.

33. The Derivative of u^n, n a Positive Fraction. We are now in a position to prove that the rule for the derivative of u^n holds when n is a positive fraction of the form $\dfrac{p}{q}$, where p and q are integers. Let

$$y = u^{\frac{p}{q}}.$$

Raise each member to the power q:

$$y^q = u^p.$$

Since u is a function of x, y is a function of x. Hence each member is a function of x raised to a positive integral power. Then each member can be differentiated by the rule of **§32** which was proved for positive integral exponents. We find

$$qy^{q-1}\frac{dy}{dx} = pu^{p-1}\frac{du}{dx}.$$

From which

$$\frac{dy}{dx} = \frac{p}{q}\frac{u^{p-1}}{y^{q-1}}\frac{du}{dx}.$$

Substitute for y in the second member and obtain

$$\frac{dy}{dx} = \frac{p}{q}\frac{u^{p-1}}{\left[u^{\frac{p}{q}}\right]^{q-1}}\frac{du}{dx} = \frac{p}{q}\frac{u^{p-1}}{u^{p-\frac{p}{q}}}\frac{du}{dx}.$$

Then

$$\frac{dy}{dx} = \frac{p}{q}u^{\frac{p}{q}-1}\frac{du}{dx},$$