17) $\ln(x+2)$

move 2 to left

vertical stretch or compression or x-axis flip

slides up or down vertical translation

$aF(bx-c)+d$

horizontal stretch or compression y-axis flip

horizontal translation slides left or right use $\frac{-c}{b}$

41) $\lim_{x\to 2^-} \ln\left[x^2(3-x)\right] = 1.386$

59) $g(t)=\frac{\ln t}{t^2}$

$$g'(t) = \frac{\frac{1}{t}\cdot t^2 - 2t\ln t}{t^4} = \frac{t - 2t\ln t}{t^{4\,3}}$$

$$\frac{1-2\ln t}{t^3} \text{ or } \frac{1-\ln t^2}{t^3}$$

59) $g(t)=\frac{\ln t}{t^2}$

$$g'(t) = \frac{\frac{1}{t}(t^2) - \ln t\,[2t]}{t^4} = \frac{t\,[1-2\ln t]}{t^4}$$

$$= \frac{1-2\ln t}{t^3} = \frac{1-\ln t^2}{t^3} = \frac{\ln e - \ln t^2}{t^3}$$

$$= \frac{\ln \frac{e}{t^2}}{t^3}$$

The parts in red are different ways to represent the answer depending on how far you wish to simplify.

63) $y=\ln\sqrt{\frac{x+1}{x-1}} = \ln(x+1)^{\frac{1}{2}} - \ln(x-1)^{\frac{1}{2}}$

$$= \frac{1}{2}\left[\ln(x+1) - \ln(x-1)\right]$$

$$\boxed{\frac{dy}{dx} = \frac{1}{2}\left[\frac{1}{x+1} - \frac{1}{x-1}\right]}$$

$$= \frac{1}{\cancel{2}}\left[\frac{\overbrace{(\cancel{x}-1)-(\cancel{x}+1)}^{-2}}{(x+1)(x-1)}\right] = -\frac{1}{(x^2-1)}$$

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

61) $y=\ln(\ln x^2)$

$$\frac{dy}{dx} = \frac{1\cdot 2\cancel{x}}{\cancel{x^2}\,\ln x^2} = \frac{2}{x\ln x^2}$$

$$= \frac{\cancel{2}}{\cancel{2}x\ln x} = \frac{1}{x\ln x}$$