

19) (a) $\frac{1}{x^2} - \frac{1}{x^5}$ $\frac{1}{x^2} - \frac{1}{x^5} = \frac{x^3 - 1}{x^5}$ $\frac{d}{dx} \left(\frac{x^3 - 1}{x^5} \right) = \frac{3x^2 \cdot x^5 - (x^3 - 1) \cdot 5x^4}{x^{10}} = \frac{3x^7 - 5x^7 + 5x^4}{x^{10}} = \frac{-2x^7 + 5x^4}{x^{10}} = \frac{-2x^3 + 5}{x^6}$

(b) $\frac{1}{x^2} - \frac{1}{x^5}$ $\frac{1}{x^2} - \frac{1}{x^5} = x^{-2} - x^{-5}$ $\frac{d}{dx} (x^{-2} - x^{-5}) = -2x^{-3} - (-5x^{-6}) = -\frac{2}{x^3} + \frac{5}{x^6}$

(c) $\frac{1}{x^2} - \frac{1}{x^5}$ $\frac{1}{x^2} - \frac{1}{x^5} = x^{-2} - x^{-5}$ $\frac{d}{dx} (x^{-2} - x^{-5}) = -2x^{-3} - (-5x^{-6}) = -\frac{2}{x^3} + \frac{5}{x^6}$

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(b) $\frac{1}{x^2} - \frac{1}{x^5}$ $\frac{1}{x^2} - \frac{1}{x^5} = x^{-2} - x^{-5}$ $\frac{d}{dx} (x^{-2} - x^{-5}) = -2x^{-3} - (-5x^{-6}) = -\frac{2}{x^3} + \frac{5}{x^6}$

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21) (a) $\frac{1}{x^2} - \frac{1}{x^5}$ $\frac{1}{x^2} - \frac{1}{x^5} = \frac{x^3 - 1}{x^5}$ $\frac{d}{dx} \left(\frac{x^3 - 1}{x^5} \right) = \frac{3x^2 \cdot x^5 - (x^3 - 1) \cdot 5x^4}{x^{10}} = \frac{3x^7 - 5x^7 + 5x^4}{x^{10}} = \frac{-2x^7 + 5x^4}{x^{10}} = \frac{-2x^3 + 5}{x^6}$

(b) $\frac{1}{x^2} - \frac{1}{x^5}$ $\frac{1}{x^2} - \frac{1}{x^5} = x^{-2} - x^{-5}$ $\frac{d}{dx} (x^{-2} - x^{-5}) = -2x^{-3} - (-5x^{-6}) = -\frac{2}{x^3} + \frac{5}{x^6}$

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