DERIVATIVES

Find the derivative of the following (using the special rules/techniques).

78. $f(x) = 4x^{-5} + 2x^{-3} + 9x^{-1} + 5$

79. $f(x) = \dfrac{1}{(3x+1)^2}$

80. $f(x) = \dfrac{6}{x^2}$

81. $f(x) = \dfrac{x+1}{\sqrt{x}}$

Answers

78. $-20x^{-6} - 6x^{-4} - 9x^{-2}$

79. $-\dfrac{6}{(3x+1)^3}$ **80.** $-\dfrac{12}{x^3}$ **81.** $\dfrac{x-1}{2x\sqrt{x}}$

DERIVATIVES

82. $f(x)=\left(x^3-2x\right)\left(3x^2\right)$

83. $f(x)=\dfrac{x^2-4}{x^2+4x+4}$

84. $f(x)=\left(3x^2-4x+1\right)^2$

85. $f(x)=\dfrac{3x\left(x^2-2x-15\right)}{x^2-9}$

86. $f(x)=\sqrt[3]{(3x)^7}$

Use the difference quotient, $\lim\limits_{h\to 0}\dfrac{f(x+h)-f(x)}{h}$***, to find the derivative.***

87. $f(x)=5-6x$

88. $f(x)=x^2-3x+5$

89. $f(x)=3x^2+4x-6$

Derivatives

Answers

82. $15x^4 - 18x^2$

83. $\frac{4}{(x+2)^2}$ **84.** $(12x-8)(3x^2-4x+1)$ **85.** $\frac{3(x^2-6x+15)}{(x-3)^2}$ **86.** $7(3x)^{\frac{4}{3}}$

87. -6 **88.** 2x – 3 **89.** 6x + 4