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| **Fill in the Blanks** | **Using the Gradient Function** |

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| **Equation** | **Gradient Function** | **Point P** | **Gradient at P** |
| $$y=x^{2}$$ | $$\frac{dy}{dx}=2x$$ | $$(2, 4)$$ | $$4$$ |
| $$y=x^{3}+x$$ |  | $$(1, 2)$$ |  |
| $$y=6x-x^{2}$$ |  | $$(4, 8)$$ |  |
| $$y=x^{3}-3x^{2}+4x$$ |  | $$(-1, 0)$$ |  |
| $$y=5x^{2}-7x+1$$ |  | $$(-2, 36)$$ |  |
| $$y=(2x+5)(x-3)$$ |  | $$(3, 0)$$ |  |
| $$y=3x(x-1)^{2}$$ |  | $$(-1, -12)$$ |  |
| $$y=\frac{1}{x^{2}}$$ |  | $$\left(2, \frac{1}{4}\right)$$ |  |
| $$y=\frac{x^{4}-5x^{3}}{x}$$ |  | $$(1, -4)$$ |  |
| $$y=\frac{2x^{3}+x}{x^{2}}$$ |  | $$\left(3, \frac{19}{3}\right)$$ |  |
| $$y=10-2x-x^{2}$$ |  |  | $$-10$$ |
| $$y=x^{4}+3$$ |  |  | $$32$$ |
| $$y=(x+4)(3x-5)$$ |  |  | $$1$$ |
| $$y=x^{2}+\frac{54}{x}$$ |  |  | $$0$$ |
|  | $$\frac{dy}{dx}=3x^{2}+6x-1$$ | $$(1, 3)$$ |  |