 Anti-derivative matching activity

1. From the following table, each entry contains a derivative statement in column 2 or a polynomial expression in column 4. Match the derivative statements to the polynomial expression. Each derivative statement has a matching pair and may have more than one match.

| **a** | $$\frac{d}{dx}\left(3x^{4}\right)$$ | **1** | $$3x^{2}$$ |
| --- | --- | --- | --- |
| **b** | $$\frac{d}{dx}\left(\frac{x^{6}}{2}\right)$$ | **2** | $$-\frac{4}{x^{5}}$$ |
| **c** | $$\frac{d}{dx}\left(x^{3}\right)$$ | **3** | $$5x^{4}+6$$ |
| **d** | $$\frac{d}{dx}\left(x^{5}+6x\right)$$ | **4** | $$3x^{5}$$ |
| **e** | $$\frac{d}{dx}\left(\frac{1}{x^{4}}\right)$$ | **5** | $$7x^{3}$$ |
| **f** | $$\frac{d}{dx}\left(x^{3}+9\right)$$ | **6** | $$-\frac{6}{x^{3}}$$ |
| **g** | $$\frac{d}{dx}\left(3x^{-2}\right)$$ | **7** | $$12x^{3}$$ |
| **h** | $$\frac{d}{dx}\left(3x^{4}-10\right)$$ | **8** | $$12x^{5}$$ |

1. As above, match the polynomial statement to the derivative statement. Consider the polynomial expression in column 2 first and try to match. Remember, each derivative statement has a matching pair and may have more than one match.

| **a** | $$15x^{4}$$ | **1** | $$\frac{d}{dx}\left(3x^{-2}+1\right)$$ |
| --- | --- | --- | --- |
| **b** | $$12x-15x^{2}$$ | **2** | $$\frac{d}{dx}\left(x^{3}+4\right)$$ |
| **c** | $$-\frac{6}{x^{3}}$$ | **3** | $$\frac{d}{dx}\left(3x^{5}-9\right)$$ |
| **d** | $$3x^{2}$$ | **4** | $$\frac{d}{dx}\left(\frac{1}{x^{3}}\right)$$ |
| **e** | $$7x^{2}$$ | **5** | $$\frac{d}{dx}\left(3x^{5}+7\right)$$ |
| **f** | $$9x-x^{3}$$ | **6** | $$\frac{d}{dx}\left(4x^{3}+3x\right)$$ |
| **g** | $$12x^{2}+3$$ | **7** | $$\frac{d}{dx}\left(3x^{5}+1\right)$$ |
| **h** | $$-\frac{3}{x^{4}}$$ | **8** | $$\frac{d}{dx}\left(6x^{2}-5x^{3}\right)$$ |

1. Explain why, in some cases, more than one derivative statement matches with the same polynomial expression.