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1. (1 pt)

Let  $F(x) = f(x^7)$  and  $G(x) = (f(x))^7$ . You also know that  $a^6 = 8, f(a) = 2, f'(a) = 5, f'(a^7) = 12$ .

Find  $F'(a) = \underline{\hspace{2cm}}$  and  $G'(a) = \underline{\hspace{2cm}}$ .

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2. (1 pt) If  $f(x) = (x^2 + 2x + 6)^3$ , find  $f'(x)$ .

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Find  $f'(5)$ .

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3. (1 pt) If  $f(x) = (4x + 3)^{-3}$ , find  $f'(x)$ .

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Find  $f'(1)$ .

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4. (1 pt) If  $f(x) = \sin(x^5)$ , find  $f'(x)$ .

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Find  $f'(1)$ .

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5. (1 pt) If  $f(x) = \sqrt{2x^2 + 6}$ , find  $f'(2)$ .

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6. (1 pt) Let

$$f(x) = \sqrt{2x^2 + 5x + 5}$$

$$f'(x) = \underline{\hspace{2cm}}$$

$$f'(1) = \underline{\hspace{2cm}}$$