

## Area Between Curves

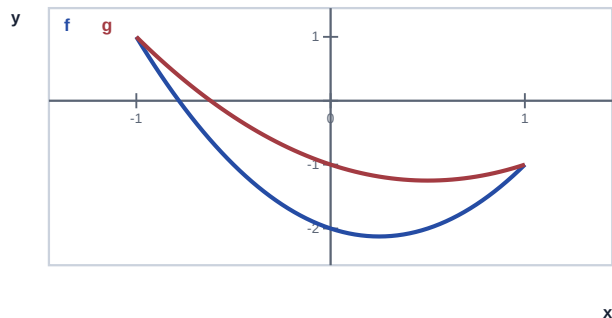
Find the total area between the curves. Split the interval wherever the curve order changes.

### 1. Integrate with respect to x.

$$y = 2 \cdot x^2 - x - 2$$

$$y = x^2 - x - 1$$

Find the intersection limits and all enclosed regions.



Shade the region, split if needed, and integrate:

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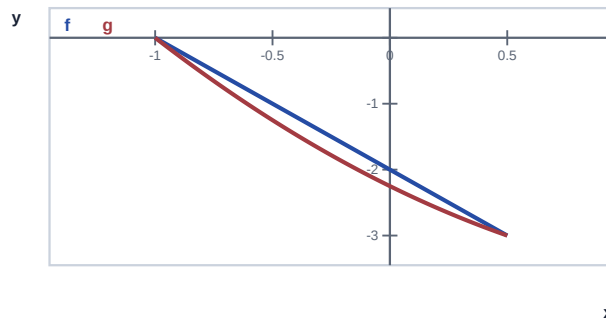
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### 2. Integrate with respect to x.

$$y = -2 \cdot x - 2$$

$$y = \frac{1}{2} \cdot x^2 - \frac{7}{4} \cdot x - \frac{9}{4}$$

Find the intersection limits and all enclosed regions.



Shade the region, split if needed, and integrate:

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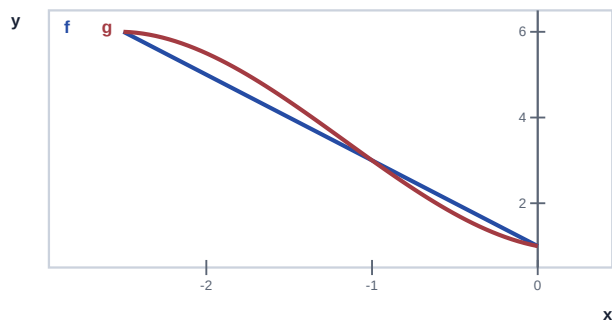
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### 3. Integrate with respect to x.

$$y = -2 \cdot x + 1$$

$$y = \frac{1}{2} \cdot x^3 + \frac{7}{4} \cdot x^2 - \frac{3}{4} \cdot x + 1$$

Find the intersection limits and all enclosed regions.



Shade the region, split if needed, and integrate:

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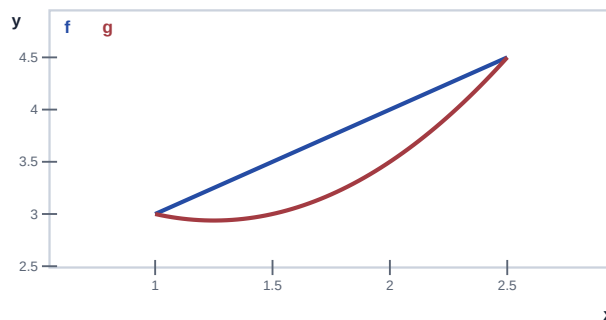
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### 4. Integrate with respect to x.

$$y = x + 2$$

$$y = x^2 - \frac{5}{2} \cdot x + \frac{9}{2}$$

Find the intersection limits and all enclosed regions.



Shade the region, split if needed, and integrate:

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