Second midterm test – sample, 12^{th} April 2024

Name:

Points: /25

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1. Compute
$$\int x^5 \sin(x^3)\,\mathrm{d}x.$$
Points: /5

2. Compute
$$\int \frac{x+2}{(x-2)(x^2+4)}\,\mathrm{d}x.$$
Points: /5

3. Evaluate
$$\int_0^2 x^2\sqrt{8-x^3}\,\mathrm{d}x.$$
Points: /5

4. Write down the horizontal and vertical cross-section of the triangle M which has vertices $(-1,-1)$, $(0,3)$ and $(-1,4)$.
Points: /5

5. Compute
$$\int x\,\mathrm{d}x\mathrm{d}y$$
over the set
$$M = \{(x,y) \in \mathbb{R}^2,\, 1-x^2 \leq y \leq 3-3x^2\}.$$
Points: /5

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1. Compute
$$\int x \log^4 x \, \mathrm{d}x.$$
Points: /5

2. Compute
$$\int \frac{x^3}{(x^2-4)} \, \mathrm{d}x.$$
Points: /5

3. Evaluate
$$\int_0^{\pi/2} \sin x \left(\cos^3 x + \cos x + 1\right) \, \mathrm{d}x.$$
Points: /5

4. Change the order of integration of
$$\int_0^1 \left(\int_{-2x^2}^{-x^2} f(x,y) \, \mathrm{d}y \right) \, \mathrm{d}x.$$
Points: /5

5. Compute
$$\int_M y \, \mathrm{d}x\mathrm{d}y$$
where M is the triangle with vertices $(-2,0)$, $(-2,6)$ and $(1,3)$.

Points: /5