Classroom Voting Questions: Calculus II

Section 7.7/7.8 Improper Integrals

1. **True or False:** If f is continuous for all x and $\int_0^\infty f(x)dx$ converges, then so does $\int_a^\infty f(x)dx$ for all positive a.

   (a) True, and I am very confident

   (b) True, but I am not very confident

   (c) False, but I am not very confident

   (d) False, and I am very confident

2. **True or False:** If f is continuous for all x and $\int_0^\infty f(x)dx$ diverges, then so does $\int_a^\infty f(x)dx$ for all positive a.

   (a) True, and I am very confident

   (b) True, but I am not very confident

   (c) False, but I am not very confident

   (d) False, and I am very confident

3. Does $\int_1^\infty \frac{dx}{1+x^2}$

   (a) Converge

   (b) Diverge

   (c) Can't tell with what we know

4. Does $\int_1^\infty \frac{dx}{\sqrt{x^4+x^2+1}}$

   (a) Converge

   (b) Diverge

   (c) Can't tell with what we know

5. Does $\int_2^\infty \frac{dx}{x^2-1}$

   (a) Converge by direct comparison with $\int_2^\infty (1/x^2)dx$

(b) Diverge by direct comparison with $\int_2^\infty (1/x^2)dx$

(c) Can't tell by direct comparison with $\int_2^\infty (1/x^2)dx$

6. Is this an improper integral?

$$\int_1^\infty \frac{\sin x}{x} dx$$

(a) Yes, it is improper.

(b) No, it is proper.

7. Is this an improper integral?

$$\int_4^5 \frac{1}{x} dx$$

(a) Yes, it is improper.

(b) No, it is proper.

8. Is this an improper integral?

$$\int_0^1 \frac{1}{2-3x} dx$$

(a) Yes, it is improper.

(b) No, it is proper.

9. Is this an improper integral?

$$\int_3^4 \frac{1}{\sin x} dx$$

(a) Yes, it is improper.

(b) No, it is proper.

10. Is this an improper integral?

$$\int_{-3}^3 x^{-1/3} dx$$

(a) Yes, it is improper.

(b) No, it is proper.

11. Is this an improper integral?

$$\int_1^2 \frac{1}{2x-1} dx$$

(a) Yes, it is improper.

(b) No, it is proper.

12. Is this an improper integral?

$$\int_1^2 \ln(x-1) dx$$

(a) Yes, it is improper.

(b) No, it is proper.