

11.7 Exercícios

1-38 □ Teste a convergência ou divergência das séries.

$$1. \sum_{n=1}^{\infty} \frac{n^2 - 1}{n^2 + n}$$

$$2. \sum_{n=1}^{\infty} \frac{n - 1}{n^2 + n}$$

$$3. \sum_{n=1}^{\infty} \frac{1}{n^2 + n}$$

$$4. \sum_{n=1}^{\infty} (-1)^{n-1} \frac{n - 1}{n^2 + n}$$

$$5. \sum_{n=1}^{\infty} \frac{(-3)^{n+1}}{2^{3n}}$$

$$6. \sum_{n=1}^{\infty} \left(\frac{3n}{1 + 8n} \right)^n$$

$$7. \sum_{k=2}^{\infty} \frac{1}{n\sqrt{\ln n}}$$

$$8. \sum_{k=1}^{\infty} \frac{2^k k!}{(k + 2)!}$$

$$9. \sum_{k=1}^{\infty} k^2 e^{-k}$$

$$10. \sum_{n=1}^{\infty} n^2 e^{-n^3}$$

$$11. \sum_{n=2}^{\infty} \frac{(-1)^{n+1}}{n \ln n}$$

$$12. \sum_{n=1}^{\infty} (-1)^n \frac{n}{n^2 + 25}$$

$$13. \sum_{n=1}^{\infty} \frac{3^n n^2}{n!}$$

$$14. \sum_{n=1}^{\infty} \sin n$$

$$15. \sum_{n=0}^{\infty} \frac{n!}{2 \cdot 5 \cdot 8 \cdot \dots \cdot (3n + 2)}$$

$$16. \sum_{n=1}^{\infty} \frac{n^2 + 1}{n^3 + 1}$$

$$17. \sum_{n=1}^{\infty} (-1)^n 2^{1/n}$$

$$18. \sum_{n=2}^{\infty} \frac{(-1)^{n-1}}{\sqrt{n} - 1}$$

$$19. \sum_{n=1}^{\infty} (-1)^n \frac{\ln n}{\sqrt{n}}$$

$$21. \sum_{n=1}^{\infty} \frac{(-2)^{2n}}{n^n}$$

$$23. \sum_{n=1}^{\infty} \operatorname{tg}(1/n)$$

$$25. \sum_{n=1}^{\infty} \frac{n!}{e^{n^2}}$$

$$27. \sum_{k=1}^{\infty} \frac{k \ln k}{(k + 1)^3}$$

$$29. \sum_{n=1}^{\infty} \frac{\operatorname{tg}^{-1} n}{n\sqrt{n}}$$

$$31. \sum_{k=1}^{\infty} \frac{5^k}{3^k + 4^k}$$

$$33. \sum_{n=1}^{\infty} \frac{\operatorname{sen}(1/n)}{\sqrt{n}}$$

$$35. \sum_{n=1}^{\infty} \left(\frac{n}{n + 1} \right)^{n^2}$$

$$37. \sum_{n=1}^{\infty} (\sqrt[3]{2} - 1)^n$$

$$20. \sum_{k=1}^{\infty} \frac{k + 5}{5^k}$$

$$22. \sum_{n=1}^{\infty} \frac{\sqrt{n^2 - 1}}{n^3 + 2n^2 + 5}$$

$$24. \sum_{n=1}^{\infty} \frac{\cos(n/2)}{n^2 + 4n}$$

$$26. \sum_{n=1}^{\infty} \frac{n^2 + 1}{5^n}$$

$$28. \sum_{n=1}^{\infty} \frac{e^{1/n}}{n^2}$$

$$30. \sum_{j=1}^{\infty} (-1)^j \frac{\sqrt{j}}{j + 5}$$

$$32. \sum_{n=1}^{\infty} \frac{(2n)^n}{n^{2n}}$$

$$34. \sum_{n=1}^{\infty} \frac{1}{n + n \cos^2 n}$$

$$36. \sum_{n=2}^{\infty} \frac{1}{(\ln n)^{\ln n}}$$

$$38. \sum_{n=1}^{\infty} (\sqrt[3]{2} - 1)^n$$