Evaluate the following integrals. If the integrand includes unspecified constants a and/or b, your answer will depend on them.

1. $\displaystyle\int x \ln x \, dx$

2. $\displaystyle\int x^n \ln(2x) \, dx \quad (n \neq -1 \text{ is an unspecified exponent})$

3. $\displaystyle\int x^2 e^x \, dx$

4. $\displaystyle\int e^{ax} \sin(bx) \, dx$

5. $\displaystyle\int x \arctan x \, dx$

6. $\displaystyle\int \arcsin(3x) \, dx$

7. $\displaystyle\int x \sin(ax) \, dx$

8. $\displaystyle\int x^2 \cos(ax) \, dx$

9. $\displaystyle\int \sin(\ln x) \, dx$

10. $\displaystyle\int x \sec^2(ax) \, dx$

11. $\displaystyle\int \ln(4 + x^2) \, dx$

12. $\displaystyle\int x \arcsin x \, dx$