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Zadatak 1

```
(%i1) e1: x1 + 3*x2 + 2*x3 = -5;
```
$$2\,x3+3\,x2+x1=-5$$

```
(%i2) e2: -x1 + x2 = -3;
```
$$x2-x1=-3$$

```
(%i3) e3: 3*x1 + a*x2 + x3 = b;
```
$$x3+a\,x2+3\,x1=b$$

1.a

```
(%i4) e3s: ev(e3, a=3, b=-3);
```
$$x3+3\,x2+3\,x1=-3$$

```
(%i5) s: linsolve([e1, e2, e3s], [x1, x2, x3]);
```
$$[x1=1,x2=-2,x3=0]$$

1.b

```
(%i6) e3r: ev(e3, a=-1);
```
$$x3-x2+3\,x1=b$$

```
(%i7) r: linsolve([e1, e2, e3r], [x1, x2, x3]);
```
$$[\,]$$

1.c

```
(%i8) e3t: ev(e3, a=-1, b=5);
```
$$x3-x2+3\,x1=5$$

```
(%i9) t: linsolve([e1, e2, e3t], [x1, x2, x3]);
solve: dependent equations eliminated: (3)
```
$$[x1=-\frac{\%r1-2}{2},x2=-\frac{\%r1+4}{2},x3=\%r1]$$

Zadatak 2

```
(%i10) kill(all);
(%o0) done
```

```
(%i1) eq: s^2+(3-A)*s+1;
(%o1) s (3 - A) + s^2 + 1
```

```
(%i2) r: solve(eq, s);
(%o2) [s = -(sqrt(A^2 - 6 A + 5) - A + 3)/2, s = (sqrt(A^2 - 6 A + 5) + A - 3)/2]
```

2.a

```
(%i3) ev(r, A=0);
(%o3) [s = -(sqrt(5) + 3)/2, s = (sqrt(5) - 3)/2]
```

2.b

```
(%i4) ev(r, A=1);
(%o4) [s = - 1, s = - 1]
```

2.c

```
(%i5) ev(r, A=3);
(%o5) [s = - %i, s = %i]
```

2.d

```
(%i6) ev(r, A=5);
(%o6) [s = 1, s = 1]
```

2.e

```
(%i7) limit(r, A, inf);
(%o7) [s = 0, s = inf]
```

Zadatak 3

```
(%i8) kill(all);
(%o0) done
```

```
(%i1) deq: 'diff(y,t,2) + 25 * y = 150 * sin(10*t);
(%o1) d^2/d t^2 y + 25 y = 150 sin(10 t)
```

3.a

```
(%i2) sode: ode2(deq, y, t);
(%o2) y = - 2 sin(10 t) + %k1 sin(5 t) + %k2 cos(5 t)
```

```
(%i3) f: rhs(sode);
(%o3) - 2 sin(10 t) + %k1 sin(5 t) + %k2 cos(5 t)
```

```
(%i4) iv: ev(f, t=0);
(%o4) %k2
```

```
(%i5) solve(iv, %k2);
(%o5) [%k2 = 0]
```

```
(%i6) df: diff(f, t);
(%o6) - 20 cos(10 t) - 5 %k2 sin(5 t) + 5 %k1 cos(5 t)
```

```
(%i7) div: ev(df, t=0);
(%o7) 5 %k1 - 20
```

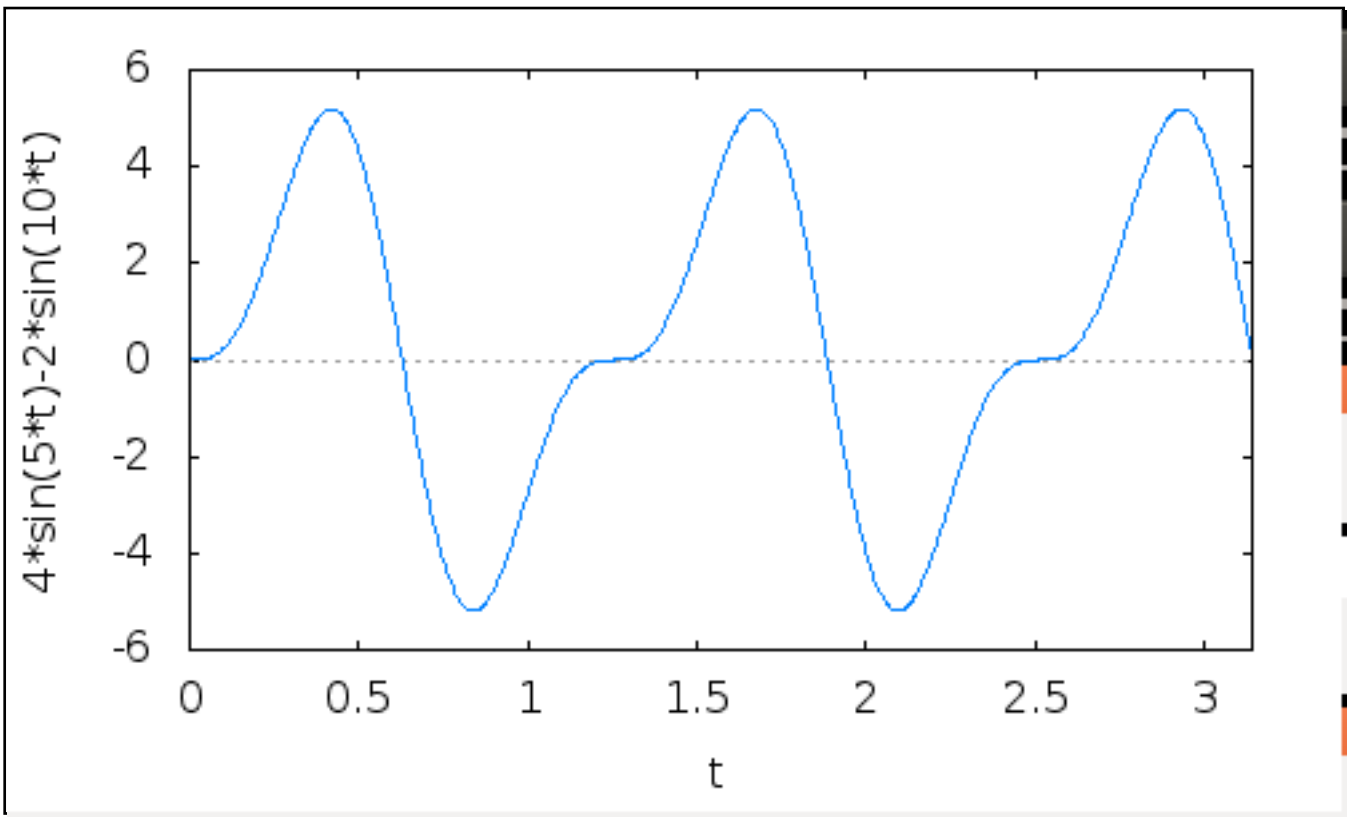
```
(%i8) solve(div, %k1);
(%o8) [%k1 = 4]
```

3.b

```
(%i9) f: ev(f, %k1=4, %k2=0);
(%o9) 4 sin(5 t) - 2 sin(10 t)
```

3.c

```
(%i10) wxplot2d(f, [t, 0, %pi]);
(%t10)
```



(%o10)